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QL WORLD

YOU CANNOT MEAN . . .

A beginner's guide
to Toolkit 2



FLASHBACK

— The Report
Generator

SOFTWARE FILE

FLIGHTDECK
D-DAY MARK II

ISSN 0951-9335



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QL WORLD

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Unfortunately, we are no longer able to answer enquiries made by telephone. If you have any comments or difficulties, please write to The Editor, Open Channel, Trouble Shooter, or Psion Solutions. We will do our best to deal with your problem in the magazine, though we cannot guarantee individual replies.

Back issues are available from the publisher price £2 U.K., £2.75 Europe. Overseas rates on request. Please telephone 089 283 4783 to check availability.

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NEXT MONTH

OPD MICRODRIVE

Adapting One Per Desk microdrives as expansion units to the QL.

FANCY STUFF

Part 2 of our article on how to mix print styles.

COMPUTERS ARE GOOD FOR YOU, SAYS RESEARCH

A don at Nottingham University has written a book entitled *Computer Addiction?* The study was initiated to investigate the syndrome of 'computer dependency' and 'to ascertain whether there was any foundation to the apocryphal stories which suggested that "obsessive" dependency . . . on computing and computers was detrimental to their psychological and social development'.

Computer addiction will have been encountered by many readers of *QL World*, usually in conversations with or by members of the family, friends, acquaintances, colleagues or classmates with a particular bias towards members of the opposite sex who feel that they are in competition with a computer or computers for the subject's time and attention.

Computing as an embracing hobby or obsession presents the outsider with problems not encountered in traditional grass widow hobbies. Unlike sports such as cricket, football, horse riding and fishing, it does not get the enthusiast out from under the feet of the family for defined periods of time nor, since it is not a spectator sport, does it provide 'support club' opportunities for friends and spouses.

Unlike familiar grumble hobbies such as the stripping of car engines, dismantling motorbikes, rodeo or prize vegetable growing, computing is not dirty and cannot be so easily confined to the garage or garden and banned during mealtimes.

The complaint that the computer enthusiast is shut away from human contact for long periods is difficult to maintain when they gather in sizeable

colonies at any social event and talk about computers. In those circumstances, the non-enthusiast must either ignore the society of enthusiasts or join them. This is difficult for the outsider to deal with.

The accusations of inward-looking, isolationist, unrealistic and elitist behaviour often levelled at computer enthusiasts is, in fact, strongly parallel to that levelled at book-worms in the past by non-readers – they were, incidentally, also told that reading would ruin their eyes. Yet today the common complaint is that too many people are illiterate.

The conclusions drawn by Dr. Margaret Shotton of the Department of Production Engineering and Production Management serve to offset the accusation that a commitment to computing is 'detrimental to psychological and social development'.

The 'dependent' sample was voluntary and consisted mainly of well-educated adult males. Two parallel control groups were selected – one non-computer-owning, the other of computer owners who did not consider themselves dependent.

The study apparently found that, although the 'dependent' group spent more time computing than others, they also used computers in a 'more exploratory and self-educational manner, rarely having a definite end-product in mind'. They were found to have developed a high interest in technical subjects early in life and a comparatively low interest in sports or purely social activities. There was a bias towards shyness and a preference for task- and object-related activities rather

than purely social ones. This was found to have resulted from their backgrounds and to be a contributing factor, rather than a result of, their commitment to computing.

The research further suggested that so-called computer dependency was therapeutic to those individuals, providing an outlet for high levels of 'intelligence, curiosity and originality', providing intellectual stimulation which they could not get from the majority of humans, and 'a level of fulfilment to which many would aspire'.

With regard to relationships, some marriages were found to have suffered where one partner had become very computer-orientated but 'only on very rare occasions did individuals express any distress about their dependency.'

Families and friends may like to know that a commitment to electronics, radio hobbies or modern music show similar causes and symptoms but they are louder, less hygienic and take far more space.

One of the possible shortcomings of the study is that the test sample were all volunteers; the results of a similar study carried-out on people who had been volunteered by their friends or families would be equally interesting, as would a similar study carried-out by a Department of English Literature.

The book, *Computer Addiction?* by Dr. Margaret A. Shotton, will be published by Taylor and Francis, Rankine Road, Basingstoke, Hampshire RG24 0PR, priced £32 (hard back) or £12.95 (paperback).

The Bible is now available on disc

The King James version of the Old and New Testaments is available from PDQL in ASCII form on around seven discs, price £45, suitable for Quill or *The Editor*. There is a comprehensive index supplied, from Adultery to Zeal. Aspiring Biblical editors can contact PDQL at 1, Heaton House, Camden Street, Birmingham B1 3BZ. Tel: 021-200 2313.

Fractals

John de Rivaz tells *QL World* that issue 3 of *Fractal Report* was published concurrently with issue 4 and that because of the large number of articles received an accelerated schedule is to be followed up to issue 7, to publish as many as possible.

Issue 5 was scheduled for early October, with issue 6 to follow either in November or in January and issue 7 to be produced concurrently with issue 6 – the final part of Volume 1 – to give a quick start to Volume 2 early in the new year for readers renewing their subscriptions for the new volume.

Enquiries to John de Rivas, West Towan House, Porthowan, Truro, Cornwall TR4 8AX.

OPEN CHANNEL

Open Channel is where you have the opportunity to voice your opinions in *Sinclair QL World*. Whether you want to ask for help with a technical problem, provide somebody

with the answer, or just sound off about something which bothers you, write to: Open Channel, Sinclair QL World, Greencoat House, Francis Street, London SW1 1DG.

No net

I read in the manual which explains Toolkit 2 — which is integral with the Trump Card — that some QLs manufactured before serial D14 was reached did not have a working NET circuit.

I find that one of my QLs has a serial number starting with D10 and, on checking it in a net, found that the net circuit was not functioning.

I would like to have my machine nettable, as it is used as a back-up as well as a general dogsbody for training, program testing and games.

Can the net circuit be acti-

vated in these earlier machines? The net ports appear to be attached to the PCB through several components present in their circuits.

If anybody can enlighten me on this point, I would be grateful.

D. McCarthy,
15 Orchard Avenue,
Lancing,
West Sussex,
BN15 9EA.

Past Eko

I would like to compliment Deltasoft for its excellent flight simulator *Flightdeck*. I ordered a copy after seeing a review in

QL World and am thoroughly impressed with it. It is the first computer simulator I have seen which flies like a real aircraft and I am greatly enjoying using it, not only as a game but also to practise instrument navigation skills. The simulator costs less than 30 minutes' flying time in a light aircraft.

Unlike many computer flight simulators, *Flightdeck* responds to small control adjustments very readily and, once settled in straight and level flight, can be flown hands-off for a period, allowing map reading or re-setting of radios, again like a real aircraft.

Although the graphics of the outside world are not so spectacular as the Microsoft PC-compatible *Flight Simulator*, mainly because of the limitations of the QL, the cockpit instruments are excellent and the aircraft is much easier to fly and has much more realistic handling. Anyone who longs to fly should try this program as an excellent and inexpensive introduction.

The aircraft simulated is a twin-engined jet and I found the keyboard of my elderly QL would not accept keypresses for both throttles simultaneously. I wrote to Deltasoft mentioning that and, to my delight, received an amended version of a new disc, virtually by return of post, which provided an extra key to operate both throttles together.

Many software companies are subjected to complaints for poor service or products, so I would like to congratulate Deltasoft on both an excellent product and excellent service to its customers.

I can recommend *Flightdeck* to any jaded QL user who would like a new source of entertainment. Many hours of careful thought have obviously gone into its development and have certainly produced good

results. Incidentally, I have no connection with Deltasoft or anyone in it.

Ruth Mackie,
Antrim,
N. Ireland.

Editor's comment: We have had other good reports of Flightdeck and we are in the process of reviewing it at the moment. A review may even appear in this issue.

In this issue? The flight simulator reviewed in the February, 1989 issue of QL World was, in fact, Flight Simulator by Eko-teck Datasystems. While it provided hours of entertainment for various test pilots — including an ex-pilot who, disconcertingly, was the only person who could not land it safely — it was definitely not Flightdeck by Deltasoft. We are glad that Mrs. Mackie has been led, even so, to a happy conclusion.

Miracle

I feel I must write to say what fantastic service is given by Miracle Systems of Osbalwick, Yorks to QL users. When you telephone you are treated with every politeness and help and nothing seems to be too much trouble. This is particularly important to somebody like me who is not blessed with computer brains. Even if an item which has a fault is just outside the guarantee period, send it back and there is never a quibble about correcting it.

I think Miracle Systems deserve every credit for the service it gives, apart from which its products are great.

John Dixon,
Battersea Village,
London.

Character

Following Desmond Barry's article about functions, readers may be interested in a tip for splitting a string containing two pieces of

Editor's notebook

Recently I tidied up the Open Channel file. Now that I have two pages for letters on a fairly regular basis, I lamented all the good ones which formerly we did not have room to include.

There were responses to articles and reviews, case histories and suggestions; personal letters to columnists with a copy in the file so that a salient point could be extracted; tips from users, grumbles about ourselves and others, long since resolved or timed-out; compliments ditto and heartfelt pleas for technical help, scarcely deserving the dry epithet "enquiries", to which we were unable to find an answer.

Most poignant of all were letters by readers for other readers whose addresses we were unable to trace.

Gathering answers to technical enquiries is still the longest and most chancy process, which is why we have never guaranteed a reply. At least I now have more space for readers to air opinions and experiences. Most of them make good reading, too.

information such as that shown in his example of a list of numbered items. By dividing the first piece of data from the second with a character which has not been used in the string previously, a quick separation of the two constituent parts can be achieved with the INSTR function.

The following snippet of code separates line numbers from a program file and prints them in a different colour:

```
100 OPEN_IN#3,
f1p1__progfile
110 REPEAT Loop
120 INPUT#3, AllLine$
130 LineNUM = AllLine$ (1
TO " " INSTR AllLine$)
140 Statement$ = AllLine$ ("
" INSTR ALLLine$ TO)
150 INK 4: PRINT LineNUM;
160 INK 7: PRINT Statement$
170 IF EOF(#3): CLOSE#3:
EXIT Loop
180 END REPEAT Loop
```

**Mike Lloyd,
Church Down,
Gloucester.**

Cardboard

I own a standard JM version QL which cost me £50. After using a Video Genie for four years it was a little difficult to come to terms with but after a time it became my main machine and is now very much respected and definitely a bargain.

I also have a Brother HR5 printer and read with interest the items concerning this printer. I would like to pass on a few tips. For the reader who uses a piece of cardboard over the 'paper empty' detection switch, try:

ESC, "8"

in the preamble sequence, and:

ESC, "9"

in the following sequence. This turns off the detection function at the start of printing and enables it again once printing is complete.

The HR5 not printing Bold Elite type has been mentioned. Although the printer does not allow Bold Elite, it acknowledges the BS code or CHR\$(8) code. This means that in Quill you can use the DEF code, which effectively gives a double strike, which is good enough to make the type stand out and is probably as close to NLQ as you will get with the HR5 and Quill. This Quill function also works for conde-

nse type, otherwise 'impossible' with the HR5.

I hope this is of use to HR5 users. I think the printer is excellent for general use and the odd piece of correspondence. It also gives reasonable screen dumps from Easel but choose your paper carefully if you want quality print.

**Graham Lutz,
Golcar,
Huddersfield.**

Memory

I have some problems using the Miracle Systems Trump Card. When Abacus is loaded the program is hung up if free memory is more than 99K. I have a Spanish version of the program, number 2.1. Are there other English versions without that problem? If someone can inform me I will be grateful.

I have also another problem with Cartridge Doctor from Talent. The boot file asks for 'extra K'. When I add the value 76+768, the program takes all the memory and Doctor is not loaded. I have asked for this from Miracle Systems but have received no response.

**Jordi Reinoso,
Lleida,
Spain.**

Editor's comment You should be using Version 2.3 or later of all the Psion software to avoid problems. If you want the Spanish versions, use the DP Editor to change the prompts. Use it in over-write mode only, as under no circumstances must the file length be altered or the program will not run. The test of the prompts and messages can be transferred from your original Psion suite of programs.

I realise that Cartridge Doctor has problems on an expanded QL, the same as most other Talent programs. That is due mainly to Talent assuming that QL owners would not expand their machines. They were wrong. So far as I am aware the only way of using this program on an expanded QL is to use one of the small shrink routines which makes an expanded QL look like a standard 128K machine.

Keyrow

I thought it would be a pleasant change to have a specific key-press to continue. While one can escape from a closed INKEY\$ loop by pressing any

```
10 PAPER 6:INK 7:CLS:CLS£0
20 eric
30 CLS:CLS£0
35 BEEP 10000,72:FLASH 1
40 PAPER 0:INK 7:AT 10,6
50 PRINT">>> ERIC STARLING <<<"
60 FLASH 0
70 REMark =====
80 DEFine PROCedure eric
90 CLS
100 PAPER 0:INK 7
110 AT 10,6:PRINT"Print 'ERIC' to continue"
120 IF KEYROW(6)=16 THEN GO TO 140
130 GO TO 120
140 BEEP 5000,160:IF KEYROW(5)=16 THEN GO TO 160
150 GO TO 140
160 BEEP 5000,126:IF KEYROW(5)=4 THEN GO TO 180
170 GO TO 160
180 BEEP 5000,104:IF KEYROW(2)=8 THEN GO TO 30
190 GO TO 180
200 END DEFine eric
210 REMark =====
```

key, one must press a specified key to escape from a closed KEYROW loop.

At last I have found a use for ALT. I have just wasted 10 minutes trying to remind myself of the QL manual explanation. Eventually I found it on page 8 of 'Concepts' and am still none the wiser. What a user-unfriendly manual - 450 pages without a comprehensive index.

Anyway, I thought it would be fun if it was necessary to type one's name or initials to continue a program. My name is short so I used it in the attached sample program. I have used sound because without it one does not know the program is working until the last letter is pressed.

For my convenience I typed a KEYROW alphabet. I enclose this, as it is easier than using the QL manual.

It might interest readers to know that I retired at 60 and started computing at 66. I am now 77 and regard myself as living proof that one is never too old to start computing. It is a great time-waster for retired folk and keeps one's brain active. My programs will always be elementary but good stories can be written in simple English in the same way that good programs can be written in simple Basic.

**Eric Starling,
Largs,
Ayrshire.**

KEYROW ALPHABET

A	KEYROW(4)=16
B	KEYROW(2)=16
C	KEYROW(2)=8
D	KEYROW(4)=64
E	KEYROW(6)=16
F	KEYROW(3)=16
G	KEYROW(3)=64
H	KEYROW(4)=4
I	KEYROW(5)=4
J	KEYROW(4)=128
K	KEYROW(3)=4
L	KEYROW(4)=1
M	KEYROW(2)=64
N	KEYROW(7)=64
O	KEYROW(6)=32
P	KEYROW(4)=32
Q	KEYROW(6)=8
R	KEYROW(5)=16
S	KEYROW(3)=8
T	KEYROW(6)=64
U	KEYROW(6)=128
V	KEYROW(7)=16
W	KEYROW(5)=2
X	KEYROW(7)=8
Y	KEYROW(5)=64
Z	KEYROW(2)=2
F1	KEYROW(0)=2
F2	KEYROW(0)=8
F3	KEYROW(0)=16
F4	KEYROW(0)=1
F5	KEYROW(0)=32
ALT	KEYROW(7)=4

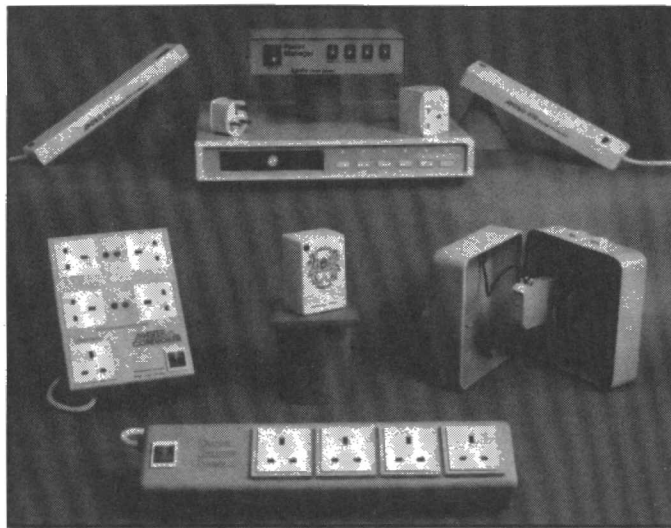
QL SCENE

MAINS SOLUTION

Computers, monitors and television sets are vulnerable to mains spikes or surges – as produced by electricity suppliers and many domestic and industrial appliances – and radio frequency interference. The problems created could possibly damage hardware, corrupt data and even crash the disc.

Apollo Electronic Products is offering a range of products to give varying levels of protection against mains interference. The range starts with a surge protector plug at £12.50 and extends to a power director at £225 which offers full surge, spike and RFI protection in a desk-top computer management system.

The total range includes individual plugs, three-way adaptors, four-way socket-strips, a five-way time-delayed



control box, desk-top control panels, single- and three-phase link boxes and the power director.

More information is avail-

able from **Apollo Electronic Products Ltd, Unit 1F, Industrial Estate, Sandy Lane, Docking, Norfolk, PE31 8NF. Tel: 04858 8156.**

Greenweld electronics catalogue

Home electronics enthusiasts will be interested in the latest Greenweld Electronics catalogue. The 1990 catalogue has 132 pages of components and equipment, including built-up audio equipment, in-car entertainment, telephones, video accessories, lighting equipment, security fittings including smoke detectors and many kinds of active and passive components.

It also sells some computer discs, cut sheet paper and storage boxes, but otherwise does not specialise in computers or accessories.

The catalogue costs £1.50 and includes £2-worth of discount vouchers. It can be obtained from **Greenweld Electronics (SQ) Ltd, 443 Millbrook Road, Southampton SO1 0HX. Tel: 0703 772501.**

Network serves green issues

From Hilary Snaden

The environment is becoming big business. People lobby to defend it, politicians make promises about it, companies launch sales campaigns round it. To keep up, the Green movement, too, has taken to new methods.

GreenNet, based in London, has as its aim "to provide to organisations working for the environment, peace, human rights and sustainable development movements a communications capability as good as that available to the Government, military and multinationals." Ambitious, but arguably necessary in the face of the enormous amounts spent by the world's decision-makers on convincing the general

public that they know what they are doing.

At present, GreenNet has links with 70 countries, with more expansion planned. Other members of the network include groups in Europe, the U.S. and South America.

The range of subjects covered is, as one might expect, enormous. Besides providing electronic mail and Telex facilities, news on the latest opinions, campaigns and events are available. Toxic waste past and future nuclear weapons tests, the Third World debt, tropical rain forests and a link with the Novosti Press Agency in Moscow are just some of the available bulletin boards.

Although GreenNet is 'non-profit' – a linked group even



offers cut-price terminal equipment to those in need – the running costs are passed to users. Nonetheless, sixpence a minute plus telephone calls to your nearest node compares more than favourably to, say, current Micronet charges. As

one might expect, most users are groups – Greenpeace, CND and the Wildfowl and Wetlands Trust to name a few – but GreenNet is open to anyone with a genuine interest.

Most of the topics covered will affect us all one way or another; if we consider the likely consequences of a rapidly-changing climate, coupled with a rapidly-increasing world population, it could be that here is an opportunity to become involved in the most important interactive adventure game yet devised. The more points you score, the longer homo sapiens is likely to inhabit planet Earth.

GreenNet may be contacted at 28-29 Underwood Street, London N1 7JQ. Please send a SAE with enquiries.

YOU CANNOT MEAN . . .

Tony Tebby's SuperToolkit 2

Tony Tebby's SuperToolkit II is indispensable to many QL owners and impenetrable to others. Mike Lloyd hacks through to the heart of the matter in this special QL First Form feature.

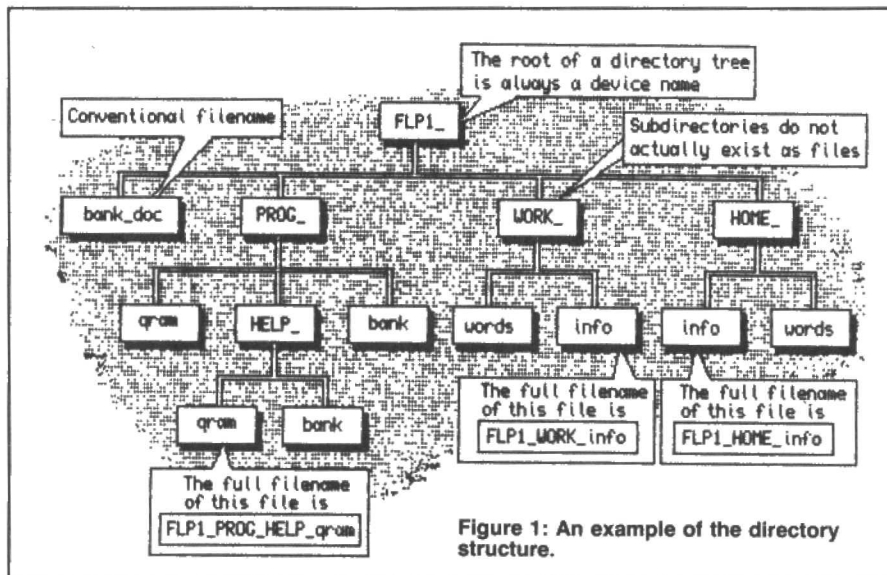


Figure 1: An example of the directory structure.

Of all the written requests for information received by *QL World* the biggest pile relates to toolkits – what are they and what can they do for me? Toolkits were described in general in the second article of the QL First Form series published in May, 1988 but questions of a more particular nature keep arriving. In this QL First Form article the spotlight is turned on the QJump *Super Toolkit II*.

The story behind Super Toolkit II begins at the launch of the Sinclair QL. Built in a hurry to meet rapidly-changing requirements, the computer was launched prematurely in a semi-finished state. Although subsequent ROM revisions addressed many obvious bugs and improved device-handling, the changes amounted to tinkering when substantial re-writes were needed. Despairing of a radical revision of the QL ROMs produced by Sinclair Research, Tony Tebby, a member of the original QL design team and the author of Qdos, produced the first version of the QJump Toolkit.

The aims of the Toolkit were to remove many of the remaining bugs in the ROM, to improve many of the existing Super-Basic commands, to develop the ability of the QL to handle devices and files, to improve its networking environment and, where space permitted, to add new features to both Qdos and SuperBasic.

Super Toolkit II, the latest version of Tebby's project, is therefore a very special piece of software because it transforms the QL into what one of its designers believes it should have become.

Like the ROM it was designed to complement, the original Toolkit was rushed, overweight and not so powerful as it might have been. Unlike the QL, however, Toolkit underwent drastic surgery to improve its functionality while reducing its length. Super Toolkit II is now available on Microdrive or on an EPROM which can be plugged into the rear of the QL for instant availability.

The main weakness of the product is its brusquely-written manual, which often assumes a level of knowledge which many of its readers might not possess. That should not dissuade potential users of Super Toolkit from purchasing the product. By installing it the QL becomes more reliable because of the re-worked code and even if only 10 percent of its facilities are used it will still represent excellent value.

The Toolkit features of most immediate use to non-programmers are the new directory environment and its associated defaults. This has been achieved in part by re-writing the SuperBasic file-related commands such as LOAD, SAVE, DIR, COPY and DELETE so that they are more intelligent and less cumbersome. If you

use Microdrives as the main storage medium the computer will assume that all programs are available on mdv1_ and all data files on mdv2_ unless you tell it otherwise. Thus, the commands to load a program and open a data file can be changed from:

```
LOAD mdv1_program: OPEN_IN#3,
mdv2_datafile
```

to:

```
LOAD program: OPEN_IN#3, datafile
```

Copying files is even easier. The default destination for copying is the printer, so printing a file can be achieved by typing:

```
COPY _N datafile
```

rather than the conventional equivalent:

```
COPY _N mdv2_datafile TO ser1_
```

The default devices can be altered by using new commands specific to Toolkit II. The default names can also be extended to include a filename prefix or suffix. All program files might be identified by a "_bas" suffix and the default program directory could be set to "f1p1_bas". The replacement for:

```
LRUN f1p1_program_bas
```

is

```
LRUN program
```

An awkward feature of standard Super-Basic is that neither the SAVE nor the COPY command can "over-write" an existing file; the destination file must be deleted before the operation can succeed. With Super Toolkit II the curt "already exists" error message is replaced by a more friendly prompt saying:

```
datafile exists. OK to overwrite? (Y or N) . . .
```

The user responds by pressing the Y or N key to proceed with or abort the operation. If the command needs to be re-issued with perhaps a slight amendment there is no longer a need to re-type the whole line. By pressing ALT and ENTER the previous line stored in the keyboard buffer is returned to the screen.

The use of defaults and wildcards in filenames is specially useful when dealing with a large number of files with related filenames. Instead of watching a rapidly-scrolling directory listing for a glimpse of Quill document filenames, the command:

```
WDIR _doc
```

lists only those files ending in the appropriate suffix. The program pauses after each screenful of data and proceeds only

if a key is pressed.

QL owners familiar with MS-DOS or Unix directory structures will appreciate the ability to construct a similar filing hierarchy on a QL with Toolkit installed. Commands such as DUP, DDOWN and DNEXT can be used to navigate up, down and across the tree structure. For QL users for whom directory trees are still a mystery, a file directory can be likened to a drawer in a big filing cabinet. The drawer contains a number of files related by name; they might all begin with "DATA". In a computer filing system any file directory can be divided into sub-directories which can in turn be subdivided. Figure one gives an example of a directory structure.

A simple use for a directory is to create back-up copies of existing data files and store them with the prefix "bcp" added to their name. For this operation the WCOPY command, meaning "wildcard copy" can be used to create copies of all Quill files:

```
WCOPY _doc TO bcp_doc
```

The affected files will be listed on the screen followed by a prompt abbreviated to "Copy? (Y/N/A/Q)". The letters are mnemonics for Yes, No, All and Quit, giving the user the opportunity to oversee the operation file by file, or to force the copying process to continue without further prompting, or to abandon the process. If copying might over-write an existing file the "OK to overwrite" prompt appears.

If files need to be re-named rather than copied the Toolkit includes a RENAME command and its wildcard equivalent. There is a wildcard-based delete option. A useful management aid is the WSTAT command which provides a directory listing with each filename followed by its size and data of creation.

There are a few important limitations to the directory structure implemented by Toolkit II. The maximum length of a default name is 32 characters and many programs, including the Psion suite, do not recognise them.

A feature of value in all manner of programs is the ALTKEY command. ALTKEY is used to associate a string of characters with a single keypress. For example, the command:

```
ALTKEY 's' CHR$(240), "DG1", ""
```

placed in the boot file for Quill will cause double-spacing to be selected whenever the ALT and S keys are pressed together. The way the command works is made clearer with the knowledge that CHR\$(240) is the character code for F3 and "DG1" are the three characters pressed in turn to select the Design option and the Gaps-between-lines sub-option and to specify a gap of one line. The null string at the end of the ALTKEY command forces a new line to be generated to return

to the Quill document. With *Lightning* installed the whole process takes less than four seconds.

ALTKEY can achieve more complex things in Quill. For instance, your address could be linked with the ALT-A combination and it could then be typed into a Quill document at a single keypress. Outside the word processor ALTKEY can find 100 different uses to reduce the need for repetitive typing.

Super Toolkit II contains a multi-tasking digital readout of the Qdos clock setting with an alarm function. To use it, therefore, the system clock must be set at the beginning of each computing session. Of slightly more specialised interest are the networking tools included with Toolkit. They amount to a comprehensive re-write of the network controller without which networking scarcely works. Interested readers are invited to read the article on networking in practice published in the July 1989 issue.

Most of the other Toolkit joys are best appreciated by SuperBasic programmers. The most startling improvement Toolkit offers over ordinary SuperBasic is its editing suite, about which Tebby appears to be unnecessarily modest. Small it may be but nonetheless welcome for that.

The editor is invoked with the command "ED", followed optionally by a channel if you want to escape from the confines of Window#2 and by a line number if editing is to start some way into the program. Comprehensive cursor controls allow you to move the cursor through the program or scroll the program past the cursor, either a line or a page at a time. When you begin editing a line it is highlighted and the changes can be discarded by pressing the escape key. A new line is begun by pressing the ENTER key and the editor uses an intelligent algorithm to select an appropriate line number for it.

Additional file management facilities to those described include functions to obtain information held in file headers such as its length, type, name and dataspace. Direct access to files is encouraged with the inclusion of a series of functions to supplement the OPEN, OPEN_IN and OPEN_NEW commands, themselves modifications of the ROM originals. The functions return values which, if negative, indicate that an error has occurred. It is possible, therefore, to construct an error-trapped suite of SuperBasic procedures for file handling.

Other errors can be intercepted using the WHEN ERROR facility which was implemented incompletely in the JS and MG ROMs and is now corrected by the Toolkit.

Programmers are likely to find the format conversion keywords of value. Functions are included which convert values between decimal, hexadecimal and binary and which can inhibit or force the conversion of decimal values to exponential format.

Output can also benefit from the PRINT _USING command which sets up a mask into which strings and values can be placed for printing. Its power is to some extent offset by its complexity but perseverance and experiment will lead to success. With some care, programmers can also introduce new character fonts with radically different dimensions to those declared with the CSIZE command.

Machine code specialists have access to job control commands, program filters and improved memory management keywords. One disadvantage of using Toolkit keywords in professional software is that you are confined automatically to selling the product to owners of Toolkit II. In those circumstances it might be better to use the Digital Precision *Turbo Toolkit* with its "run-time module" which can be sold with the software to re-create the programming environment on the customer's computer.

The QL operating system and programming language have never been developed to their full potential. As one of the original QL architects, Tebby is well-placed to finish the job and Super Toolkit II represents a considerable achievement. For non-specialists for whom every SuperBasic command is a trial and every boot file a nightmare, the Toolkit offers simplicity and protection from even the most foolish mistakes. For programmers, the Toolkit offers safe device handling, a considerable increase in programming power and a remarkably effective program editor.

Figure 2: Toolkit Commands

Facilities useful to the non-programmer

Default device names: Reduces the amount of typing required by assuming that a device name (e.g., mdv1_) is present in commands such as LOAD filename.

Wildcards for filenames: Allows files sharing a filename prefix or suffix to be acted on together. Thus WDIR _doc displays a directory listing of all files ending with a _doc suffix.

Interactive file management: The user is asked to confirm an action related to file management. If the file "boot" exists, the command SAVE boot will produce the fact that the prompt boot exists. Overwrite (Y/N?). The standard prompt is (Y/N/A/Q?) meaning Yes, No, All (files in a list), Quit.

Automatic screen freeze: When a listing threatens to scroll out of sight a CTRL-F5 keypress is generated automatically to freeze the display until a key is pressed.

Last line recall: The last command line to be typed-in can be recalled by pressing ALT-ENTER.

Key definition: A piece of text or a series of commands can be associated with a single keypress. Works in any program environment.

Network driver: For people linking many QLs in a net. Enhances the somewhat crude facilities present in the QL ROM.

Multi-tasking clock: Provides a digital readout of the QL clock setting. Can act as an alarm. Works alongside other programs.

Facilities useful to SuperBasic programmers:

Full screen editor: Simplifies the creation and editing of SuperBasic programs. Intelligent line numbering, full screen movement, undo facility.

Command file execution: A file of SuperBasic commands can be actioned by the keyword DO.

Error detection: The error detection suite partially implemented in later QL ROMs is corrected and improved.

Channels to files: Files can be opened with functions which return positive channel numbers or negative error numbers.

File information: Elements of file headers such as length, type, dataspace and name can be retrieved using functions.

Writing to files: Raw bytes of data can be read, over-written, appended and removed from files.

Output facilities: Display formats can be specified by a mask using the PRINT _USING command so that, for instance, values are right-justified and preceded by a currency symbol.

Conversion from decimal to exponential format can be suppressed or forced.

Values can be converted between decimal, hexadecimal and binary.

Display management: Cursors can be turned on and off.

Windows can be re-set to their opening characteristics.

New character fonts – none provided – can be assigned to windows.

Non-standard character sizes can be selected.

Parameter interrogation: The names, type and usage of formal parameters in user-defined procedures and functions are returned by functions.

Facilities useful to machine code programmers:

Task execution: EXEC and EXEC_W replaced by EX and EW; new ET command for debugging; Call commands can be followed by parameters including channel numbers.

Filters: Tasks can be piped together to act as filters for a data stream.

Task management: Current tasks can be listed.

Tasks can be removed or activated or their priority altered.

Functions return a job's priority, owner, name and successor.

Memory management: Space in the common heap can be allocated or cleared.

Note: A few miscellaneous keywords have not been included for reasons of space.

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ZITASOFT SOFTWARE by Steve Jones

LOCKSMITH copies M/DRIVE — M/DRIVE @£ 11.50c

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TROUBLE SHOOTER

Yet another PC MS-DOS emulator. Once again, Digital Precision has provided something to keep discussion at a high pitch.

As with *The Solution*, *PC Conqueror* is software-only and, as one would expect, it is said to be appreciably faster than the first DP offering. Quoting speeds is a good way of putting one's neck on the block, I have so far not used the new program but it is claimed that operating speed is sufficiently close to that of a PC or PC/XT for the QL-plus-emulator to be considered as an alternative to a PC in normal daily business use.

On the Thor XVI or the Atari with QL emulator, the PC emulator should fairly whizz along. All commercial PC software which uses MDA or CGA screen drivers should run properly; even *Flight Simulator 1* should be usable at a realistic pace. The price of *The Solution* has been reduced considerably to reflect how much better DP thinks *PC Conqueror* is.

Rumours

Of the other announced MS-DOS emulator, *Transformer*, I have heard only rumours – not the encouraging type.

The Report Generator module for *FlashBack Special Edition* has now appeared and deliveries have been made. The package is a comprehensive one and should take *FlashBack* up a notch or two for anyone who doubted its worth.

What follows Special Edition? Another of them, *Lightning*, has reached version 2.10. There was a minor bug in 2.09 which was unlikely to be noticed by most users; it caused characters to be displaced 32 places to the right on the screen.

Not to be outdone, Software⁸⁷ has added a Merge function to *test⁸⁷* and made it version 2.10. There is more to follow, with a version 3.00 projected. Development of printer drivers continues; this is really the only QL program to have ready-made drivers for a wide range of printers. A refreshing change from the usual form was found in the size of the new program file, which is smaller than the previous one.

Reading instructions can be a real pain and some programs compel the user to read the paperwork by not being intuitive to use. The original *Media Manager* was rather horrible to use. It worked, although certain functions were not exactly 100 percent reliable but I wondered regularly which disc was supposed to be in what drive and just what could be expected from selecting some of the displayed option.

The new *Special Edition Media Manager* is not a rewrite of the original; it is

This month Bryan Davies glances at some of the new updates appearing on the market.

completely new and, better still, it was written by Chas Dillon, who has a clear manner of presenting programs to the user. That is by no means to say that everything he writes is "dead simple" to use – it was about 12 months before I felt I new how to use *The Editor* reasonably well – but any problems using his programs are likely to be related to the abundance of features incorporated in them, not to the obscurity of the user interface. For those who never new what the original was for, the general idea is to provide the user with the facilities needed to "look into" cartridges and discs and restore deleted or corrupt files, perform sector-writes, make printouts of storage maps and so on.

The program can also read from and write to discs in IBM MS-DOS and Atari TOS formats and give directory listings in various sorted orders. A brief test drive was encouraging; it was straightforward to get a directory of either an MS-DOS or Qdos disc without needing to refer to the written instructions. Assistance is given on-screen, to point the user in the proper direction. Equally pleasing was the transfer of a file from an MS-DOS disc which had been transferred there the previous day from the QL. That is the file from *text⁸⁷* had previously been converted from Qdos format to MS-DOS, then loaded into a PC program – *WordPerfect* – for processing there; the same file, converted back to Qdos format by *Media Manager* loaded into *text⁸⁷* again with no fuss and was evidently unchanged by the experience.

That file, and two others which had also had similar journeys, were also loaded into *The Editor* and appeared looking as they should. The written instructions are clear and readable and are not so big a meal to digest as usual Digital Precision offerings; regardless of the straightforwardness of the user interface, it is recommended that the written text be read from cover to cover.

Whose law?

It must be somebody's law that now I have a usable program to recover corrupted files I do not get them any more. Since buying disc drives several years ago, corruption has been almost non-existent. It is to be hoped the ability of *Media Manager* to reveal the "internals"

of discs will put utility operations on the QL on a similar footing to those on the PC which has some excellent utility programs.

The revived *QL SuperBasic – The Definitive Handbook* has now reached many eager hands. It is as good an £8-worth as you can get in the QL world. Highly-recommended for anyone who programs in SuperBasic. The book is now in spiral-bound form, making it more convenient to lay on the workbench or desk than the original hardback. The rights to the book now belong to the author, Jan Jones, and she gave Quanta, the QL Users' Group, permission to reprint it; it means that reprints will be available in future. At the rate the initial batches of copies was being sold reprints look certain to be needed – a very encouraging sign for the QL scene as a whole.

B. Hand reports the copy of *Front Page Extra* made for him works properly. As evidence, he sent a well laid-out two-page newsletter. The reason for previous copies not working is still a mystery. **Peter Hale** of EMSOFT, in Boston, U.S.A., sent a list of suggestions for improving the speed of Abacus operations with large spreadsheets; they have been sent to **Duarte Mendes da Costa** in Portugal.

John Acielo has given details of his "loaded" QL system, which we will try to describe in detail elsewhere. He asks if any other users have used the EPROM expansion of the CST 512KB RAM+ card successfully. He bought the kit and fitted the chips but could not get it to work; he does not have the information on the type of EPROM which can be used.

If **Omridale** and **Athene** are still in business we would appreciate hearing from them about outstanding queries.

INFORMATION

PC Conqueror alone £89.95 (upgrade for owners of *The Solution* £60), with MS-DOS 4.01 £139.95. **The Solution** vanilla £39.95, chocolate (4.01) £89.95. **Lightning Special Edition** £49.95. **Media Manager Special Edition** £49.95. Digital Precision, 222, The Avenue, Chingford, London E4 9SE. Tel: 01-527 5493.

FlashBack Special Edition, £40 (£15 upgrade for existing users), *QL SuperBasic – The Definitive Handbook*, by Jan Jones, £8. Sector Software, 39 Wray Crescent, Ulmes Walton, Leyland, Lancs PR5 3NH. Tel: 0772 454328.

QL Users' Group: Quanta, 15 Grosvenor Crescent, Grimsby, South Humberside DN32 0QJ. Tel: 0472 49850.

text⁸⁷ £45, or £80 with *Founttext⁸⁹* and *Founted⁸⁹*, upgrades £15 for *text⁸⁷* and £3 for *Founted⁸⁹*. Software⁸⁷, 33 Saver-nake Road, London NW3 2JU.

SOFTWARE FILE

FLIGHTDECK

Program: Flightdeck
Supplier: DeltaSoft
 Computer Software,
 11, Dumaine Avenue,
 Stoke Gifford, Bristol
 BS12 6XH.
Price: £22.95 mdv or disc,
 inc. postage world-wide.

Also available: AMD
 Airplan Pilots' Flight
 Planner, £14.95.

Flightdeck is a flight simulator based on a twin-engined passenger jet. It shows the view from the cockpit window in the top half of the screen and an array of realistically-drawn instruments in the bottom half. The program includes data on more than 200 navigation beacons, which may be accessed on the instrument display when in range. It also includes the location and runway layouts of a number of U.K. airports.

The manual recommends that a back-up copy should be made before use. The book also states that distributing copies to other people is a breach of copyright and that the source of a breach can be traced because each program is identified by a serial number. If you try it on someone else's QL and like it, buy your own copy.

The first menu offered allows the starting location and flying conditions to be set up. A reasonable default is provided but it is easy for the user to alter settings. The program disallows weight loadings which exceed the capacity of the aircraft, so you cannot overload the aircraft and inevitably fail to take off, no matter how many times you try.

Cloud cover can be specified. It is measured in oktas – eighths of the sky covered with cloud. You can specify the altitude at which cloud first

Andrew Armstrong flies into the clouds — in oktas — with a sophisticated twin engined flight simulator.

appears — at two oktas — and the altitude at which it has increased to eight oktas. As the aircraft climbs the display of scenery through the window starts to 'white out' occasionally at the two-okta level and remains blank above the eight-okta level. After that point you are flying on instruments alone at which — jumping the gun slightly — the program is really aimed.

Spacebar

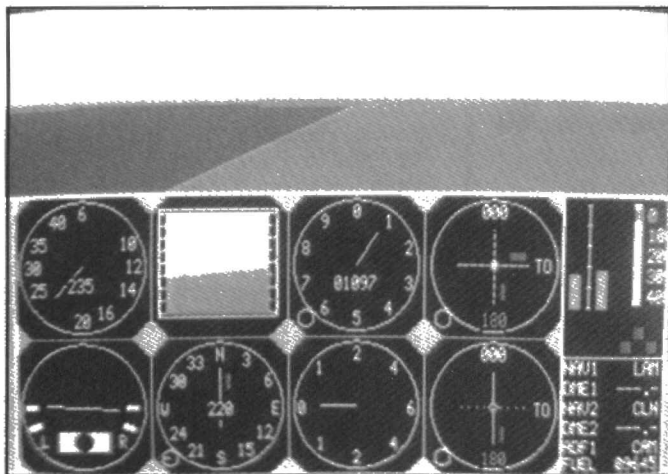
After using the spacebar — or fire button if using a joystick — to leave the opening menu the instruments and view from the window are drawn. The QL starts making a rasping noise which, as usual, is intended to represent the engines. This is best switched off immediately. The manual says that full thrust should be applied to both engines. The aircraft will accelerate along the runway and



The main program menu.



The instruments shown in 'bank' with an airport ahead.



Engine thrust will not balance.

the rudder can be used to keep it straight if necessary.

When a suitable take-off speed is reached, depending on the weight of passengers and fuel, the nose should be pulled up so that the aircraft climbs at 15 degrees. The book suggests 170 knots for the take-off weight I was using but in practice anything below 230 knots resulted in instant stall on take-off, no matter how gentle the climb.

The manual adds that to achieve level flight the pitch should be adjusted slightly to level the aircraft, with a pause between each re-adjustment to let the aircraft stabilise. It also states that it may be necessary to adjust the thrust to get the aircraft completely level. Too true. You tap the key for the required function and nothing happens. Then you hold it down a little longer and suddenly the program looks at the keyboard and the adjustment overshoots. Then you hit the reverse key and it goes too far in the other direction.

Bouncing

After bouncing backwards and forwards a few times, normally it is possible to adjust things fairly accurately but it is difficult to balance the thrust of the motors. They are particularly difficult to balance at a little below 50 percent thrust.

The program does not like the aircraft to go too fast. If the airspeed exceeds 400 knots, the upper limit of the speed scale, there is likely to be sudden substantial loss of speed. On successive screen refreshes I observed 401 knots and 316 knots on the airspeed indica-

The simulator is claimed to give shaded 3D views of the outside scenery. The views presented in the window display did not look at all 3D to me. At all times the ground appeared as a flat area, with occasional areas of different-coloured shading. This seems to me a reasonable limitation, because the view from an airliner at a substantial height looks flat. If the book had not claimed 3D views I would not have given this factor another thought.

The documentation is reasonably complete and gives you almost all the information

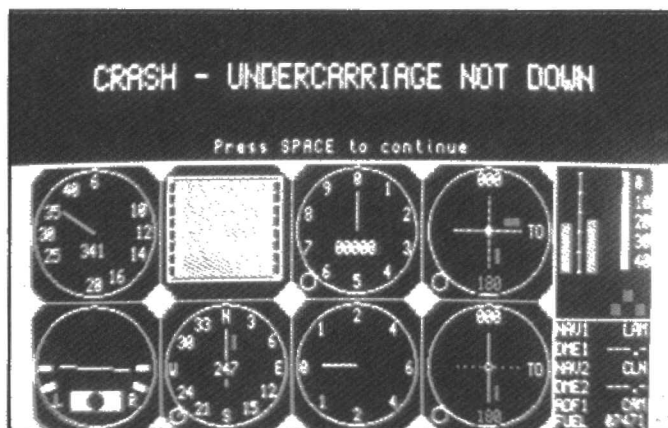
limited time to ponder before action is necessary.

Oddly, the default airport – I think it is Aberdeen – at which the flight starts is not marked on the guide map of the U.K. It appears to be just out of view, an additional and possibly unintentional challenge to the operator.

I have criticised the responsiveness of the controls but to place too much weight on that would be to miss the point. This is not an action game in which you fly round the sky like a fighter pilot. The only time when the speed and accuracy of the controls becomes a problem is on landing and even then the problem is not insurmountable. The purpose of the simulator seems to be to give as realistic as possible an illustration of the techniques of flying on instruments. It does so effectively and might well assist a private pilot wishing to progress from visual flight rules only to instrument rating.

A small point I should mention is that in the review copy all the frequencies of the beacons are given in kilohertz; they should be in megahertz.

To make good use of the facilities of the program it is helpful to plan a route and list frequencies and identification of beacons along the way, together with estimated times to reach each one. By selecting a significant wind speed, one can practise taking account of a



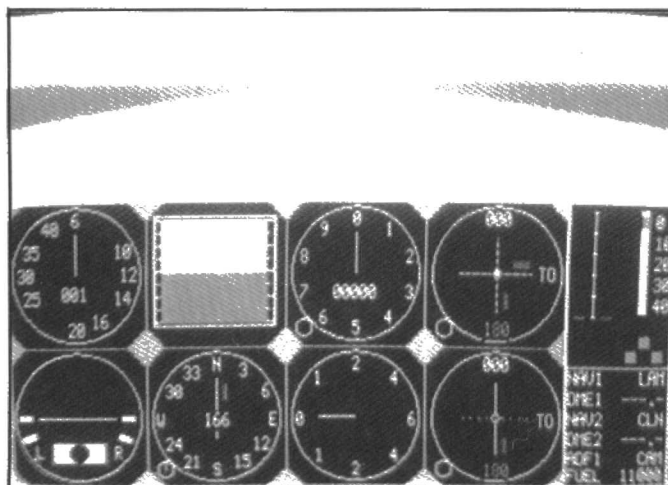
After a test dive into the sea.

tor. *QL World has been told that this is an overspeed indicator, and that an alternative version is available.*

The artificial horizon does not have a conventional appearance. In a normal aircraft the artificial horizon consists of crosshairs or a diagram of an aircraft. In this program, a square with green and white areas is used, the green presumably representing ground and the white representing sky.

you would like to have about the program but it is written by someone who understood the program too well. The instruments are described but a diagram of the whole layout of the instrument panel, with labels, would have imparted much more information with far less effort on the part of the reader. Some of what is described leaves the reader slightly unsure until the instrument responds in the way described and then there is

'The good points of the simulator outweigh the shortcomings.'



On the runway waiting for takeoff.

crosswind in choosing the heading at which to fly. The use of a U.K. map, including a large selection of beacons and airports, makes this aspect of the simulation realistic and interesting.

I would have liked the facility to pause the program so that I would not lose track when someone interrupted and it would have been more pleasant without the problems I mentioned but my overall impression was very positive. If you are interested in instrument flying you will probably find that the good points of the simulator more than outweigh the slight shortcomings.

FLASHBACK

Special Edition Part 2

Bryan Davies follows up his review of the new FlashBack by looking at the Report Writer and an update on the program.

INFORMATION

Product: FlashBack
Special Edition
Supplier: Sector Software,
39 Wray Crescent, Ulmes
Walton, Leyland, Lancs
PR5 3NH.
Tel: 0772 454328
Price: £40 (£15 for upgrade from
earlier FlashBack)

The changes to *FlashBack*, now called version 2.0, were detailed in the June issue. It has been hoped to have the add-on modules available at that time; also there has been one of those not uncommon delays which beset computer programs. The question now is are the results worth the wait?

FlashBack may be of secondary importance to some users, a word processing program being used most of the time. One cannot, however, consider FlashBack as a small utility which can be treated lightly. Its file size is almost 54KB and the space required for loaded database files and

workspace soon mounts to more than 100KB. At that size, the program has to be taken seriously and it acquits itself well when full use is made of it.

The Report Generator is separate from FlashBack, taking up about 10KB for the basic program boot, plus up to about 60KB for the particular function in use. Potential purchasers are advised that a memory expansion unit giving at least 256KB, i.e., 384KB total memory is required for the complete set of routines in the Special Edition. You can run FlashBack or the Report Generator functions, separately, in less space.

There are a few points on FlashBack which merit further comment. When running additional copies of the program, started from the initial copy, about 30KB minimum extra memory space is required for the second copy, plus space for the _DBA file to be loaded. To keep the space required for the second copy to a minimum, you need to use the CONFIG-BAS routine to reduce Expansion Memory, Number of References, and Number of Records to as low as is acceptable for normal operations and put the Save Screen option to No; the amount

the latter action saves depends on how large the FlashBack window is but it is 32KB for a full screen.

One word of warning – do not start making reductions until the two instruction files have been loaded. They are both stored in a compressed form, because of the restrictions of cartridge space, and have to be loaded, then re-saved in uncompressed form; to load them, the Expansion Memory and Number of References need to be relatively high as they are set when the working program copy is made.

The Xclude and INclude commands are not mutually exclusive and either or both can be used during a Group-ing operation. The number of Xclude-d or INclude-d records is noted under "Ref No" on the program status line. The View command may have been rather slow previously, when large databases were used, and a quick-search feature has now been added. To find any record in a Group-ed file, start typing the first characters of the Group field for that record; FlashBack will match the typed string to a record following your input continuously until the correct one is found.

Two pages of written instructions are sufficient to enable the user to make a working copy and get started using it. A database program lends itself to use for displaying instructions from files and the bulk of the instructions for FlashBack are contained on two such files. There are more than 20 pages, which would be a large job to print-out. Fortunately, good use is made of the F2 key to move round the files quickly; for those unfamiliar with this feature, keywords are placed at appropriate points in the file and putting the cursor anywhere on one of these words, then pressing F2, will take you to the section of the file to which the word refers.

The word Index, which is placed at the bottom of several records in the instruction file for the Report Generator, takes you back to the main list of records in the file. The instruction files are easily navigated and can be included in any other database for fast reference during normal working but some people might prefer them in written form and will have to print them out; it would be pleasant to see written instructions offered as an extra-cost option.

The same procedure is employed as previously for installing FlashBack and existing users will find it familiar, apart from the possible need to put working copies of the Report Generator files on a separate disc, the space now taken making it likely it will not all fit on one system disc. The FlashBack boot has some small differences from the previous one, so be careful to make the changes if you have integrated the previous routine into a system boot. There is a line <FOR i = 1 TO 2000: REM> after the EXEC instruction for FlashBack; note that the second figure has risen from 1000 to 2000. If you

FlashBack Printer Driver			
Initialisation		From	To
Device	ser1	£	0R(3) 0BR(0)
Baud	9600	(178)	0R(4) 0BR(0)
Preamble	0H0(1) 06		
Postamble	0P		
Mode	Chr On Off		
Bold	B 0C 0H		
UnderLine	U 0-(1) 0-(0)		
Low Script	L 0S(1) 0T		
High Script	H 0S(0) 0T		
Condensed	C 0!(4) 0!(1)		
Medium	M 0!% 0!(1)		
Italic	I 04 05		
Enlarged Pica	G 0! 0!(1)		
NLQ	N 0< 0!(1)		
Proportional	Q 0p(1) 0p(0)		
Enlarged Elite	E 0!! 0!(1)		
Pica	P 0!(0) 0!(1)		
Undefined			
Undefined			
Undefined			
		Move using ++t+ and press space bar. Press ESC when everything is correct	

Figure 1: FlashBack printer driver file.

understand the significance of the line that is satisfactory but do not get rid of it whether you do or not. A further boot is created, for the Report Generator functions.

Presumably, users in general will not want to use these functions as often as the main program and the installation routine sensibly provides the option to put them on to a separate disc or cartridge. Use is made of the Liberation Software fast SuperBasic loading extensions QLOAD and QLRUN to speed starting of the report functions, which are written mainly in SuperBasic; a run-time module of QLOAD is incorporated.

None of the Special Edition routines requires the QL to have any SuperBasic extensions such as those from *Turbo Toolkit* or *Toolkit II* installed; the extensions used are all installed when the program is loaded. Reports are created in Quill and that program should be on the same disc as the report files or handy on another cartridge.

The Report Generator can be run as a job under *TaskMaster*, or alongside executable jobs controlled by *Q-Switch* or the like, or as one of several independent Qdos tasks. The boot has two RESPR lines, which caused no problem when run after several other programs had been loaded, because FlashBack was one of them and loading that modifies the RESPR instruction to allow its re-use later; if there is difficulty getting memory space reserved, the RESPRs could be changed to ALCHPs, provided a suitable Toolkit is installed.

The functions provided are Mail Merge, Prepare Labels and Reports, the format of each being determined by the user. Although those functions are independent of FlashBack, the latter can be working simultaneously. Loading, saving and report-preparation operations are monitored by a bar graph display along the bottom of the screen. Operation is Quill-based; as the program everybody has, it is sensible to base the report operations on it but you can use other WP or editor programs to produce the templates for reports.

One point which tends to become apparent quickly is that the user may need to give more thought to the layout of databases in future, to be able to utilise the Report functions fully. FlashBack is so very flexible that it is tempting to cram more than one "subject" into one field, with the result that it may be impossible to print-out data in an acceptable format. The "classical" database field layout, with surname, first name, street address and so on all in separate fields is still desirable when printed output is required.

A straightforward menu of options is presented when the Report Generator boot program has loaded. Getting back to the required function later can be a rather roundabout process if you have other tasks running simultaneously - there is not always a cursor to CTRL+C to - but is

```

1
HEADING
"STATEMENTS AS AT "DATE1E10
PAGE
HEADER
"Universal Supplies Unlimited Ltd.IN
"Statement of Account "DATE1M
TRAIN

P"Q"BF1                               ] Invoice No.      [V1]
[F2V50]
[F3                                     ]
[F4                                     ]
[F5                               1]

"UFor the attention of [F7V30] [V1B1P1Q

MODE: INSERT          WORDS: 73          LINE: 1    PAGE: 1
TYPEFACE: Normal     DOCUMENT: "statem"
1
"UFor the attention of [F7V30] [V1B1P1Q

Transaction Date  Item          Quantity    Price      Vat      Total
"SUBRECS
[F8      _]    [F9      _] [F10R]    £[F11R02] [V12R02]    [V13R02]
"SUB_SUMMATION

Totals:          £[V15R02_] [V16R02 _]

"UTotal Amount Outstanding For This Statement is £[V16R02 _] [V
"SUMMATION

Grand Total £[V19R02 _]+[V17R02 _]=£[V18R02 _]

"END

MODE: INSERT          WORDS: 73          LINE: 37   PAGE: 1
TYPEFACE: Normal     DOCUMENT: "statem"

```

Figure 2: A sample.

simple enough when the program is run on its own. The options are selected by function keys. F1 is for the Report or, more specifically, for creating _CFG configuration files and printing reports. F2 starts Quill running, ready for preparation of _LIS files, which provide the report templates into which information from _DBA files is fed.

F3 is for creation and customisation of printer drivers. F4 takes you back to SuperBasic. The instructions advise the user to prepare a printer driver as the first step but it might be worth printing some of the examples with the supplied DRIVER__DRV file first to see what the results are in case something goes wrong with the driver you create.

The thought of creating a printer driver

may raise a groan from users who have not yet mastered setting-up the Quill printer driver but life has been made fairly easy for them. Note is made at various points that the driver created here is not a Quill PRINTER__DAT file; the file suffix is __DRV. Clearly, the driver has to perform the same kind of operation as the normal Quill driver and printer codes have to be inserted into the report file which is to be printed.

A simple format is used for printer codes - the ~ (tilde = SHIFT+£) is used to switch on features and the : (vertical bar = SHIFT+/) to switch them off. Those two characters are each followed by a single character representing the feature required; ~B can be used to switch on Bold print, :B to switch it off. You are

advised initially to convert your existing Quill PRINTER__DAT file to PRINTER__DRV, which involves no more than pressing F3 from the opening Report Generator screen, typing-in the name of your printer driver file and pressing ENTER.

The screen displays the settings which were made when your PRINTER__DAT file was created originally but in the form of the FlashBack __DRV file - figure one. What is immediately obvious is that the restriction placed on the number of code conversions by Quill is not carried over to __DRV files; you can be much more ambitious now. Changes can be made to the driver at this time but it is probably better to leave it as it is and see how the printout looks, before risking complications by adding more translations. Pressing ESC takes you out of the code display screen and you are then invited to save the driver under its original name - the one at the top of the parameters list when using INSTALL__BAS - with just the suffix changed to __DRV; the name can be edited, if desired.

Escape code

One thing to remember when converting, modifying or creating a driver is that the Copyright symbol is used to represent the code for ESC in the program, so that if you have used this symbol in one of your Quill Translate entries it will not come out correctly after the conversion process. Likewise, if you have already used either the tilde or vertical bar characters there may be problems at print time; what happens then depends on whether or not the characters following those two happen to be ones the Report Generator is expecting as its own printer codes, such as B, U, I - bold, underlined, italicised.

The user is free to alter the default definitions for printer codes and/or insert new ones. If a definition for Enlarged Elite is required and name can be inserted to replace one of a series of "Undefined" entries, a suitable character added to follow the tilde - e.g., E - and the appropriate switch-on and switch-off codes entered under the "From" and "To" headings.

Simple character code conversions, such as used to get the £ sign printed, are entered in a second column, as the "From" and "To" codes. A From of (178) and a To of c R(4)/c R(0) will enable a screen 0 to print-out as 0 also, by calling temporarily for the Danish character set, printing CHR\$(92), then switching back to the U.S. set. As the c (SHIFT+ESC) symbol looks similar to the @ (SHIFT+2) on some screens and is close to it on the keyboard, be careful to hit the correct keys for inserting ESC.

A typical 'report' could be an invoice. While this job is normally left to an accounting program, small businesses could well manage with just Abacus and FlashBack. Orders can be recorded easily

in FlashBack, since the data structure is so flexible. It is only a question of getting the data out, in the appropriate form to send to customers. A Quill screen can be used to display a sample invoice 'template' on it. The template is prepared as a __DOC file but it has to be Print-ed to disc or cartridge as a __LIS file before it can be used by FlashBack.

Figure three illustrates the screen display of a Configuration File which could be used to print-out invoices. The template entries of the form [F1] mark where __DBA file record fields are to be printed. The [V1]-type entries identify calculations; they are specified on the configuration screen. The VAT column contains [V12RD2], and the configuration screen shows [V12]=round([F10]*[F11]*15/100), which means multiply the quantity and unit price figures, take 15 percent of the product and do the "round" function to give an accurate VAT value; "round" is built-into FlashBack to correct errors the basic QL can make in such calculations.

There is no room on the screen for all of some equations but characters going beyond the right edge are still recorded. The "RD2" section for the VAT field is the shorthand way of specifying that the print should be Right-justified, in Decimal form, and with two places after the decimal point. Several operators of this type are supported, giving considerable flexibility in the way the output is specified for printing. Preparation of a template initially may be baffling to those who have not previously encountered such things some familiarity with mail-merge operations helps. The provided examples are sufficient to get the user started. The option is available to print reports to the screen, allowing proofing of the format

before committing it to paper. The configuration screen includes Help information. When the details have been entered on this screen to the user's satisfaction, pressing ESC will initiate the print process. There is an initial period during which the program digests what is being asked of it by the configuration data and lists it in window; the length of the period depends on how complicated the configuration entries are. The result of combining the template and the configuration from figure three is show in figure two. This is only a partial printout; reference to figure three will give the clues as to what else is printed.

There is a "title" page, with a Heading on it, before the customer invoice pages, and a final page with "Grand Totals" on it,

'One cannot consider FlashBack as a small utility which can be treated lightly - the workspace soon mounts to 100KB.'

after them. Eagle-eyed readers will also spot that the print in figure two is not exactly as specified by the template, insofar as alignment of text is concerned; the solution to this problem has so far eluded me but I suspect part of it is concerned with the oddities of Quill file structure.

There is a series of commands available for use in reports. All are prefaced by the tilde character. Figure two illustrates several of them in use. ~HEADER tells the printer driver that the following line

Flashback Report Configure

Database	: flpl_statement_dba	PreLine	: [V1]=1999
Printer Driver	: flpl_driver_drv	Line1	: [V1]=[V1]+1
OutPut Device	: printer	Line2	: [V17]=[V17]+[V15]
		Line3	: [V18]=[V18]+[V16]
Template	: flpl_statem_lis	Line4	:
Continuous	: NO	Line5	:
Page Feed	: FORM FEED	Line6	: [V15]=0:[V16]=0
Page Length	: 70	SubLine1	: [V12]=round([F10]*[F11]*15/100
Tab Length	: 8	SubLine2	: [V13]=[F10]*[F11]+[V12]
Top Margin	: 2	SubLine3	:
Bottom Margin	: 2	SubLine4	: [V15]=[V15]+[V12]
Start Record	: 1	SubLine5	: [V16]=[V16]+[V13]
End Record	: 2	PostLine	: [V17]=[V17]+[V15]:[V18]=[V18]+

To exit, when all defaults are satisfactory, press ESC.
 To load a different configure file, press F3.
 To edit something, move inverting bar with ↑↓ over it and tap the space-bar.
 To see a directory, enter just the device, by any prompt and press F2.
 When editing ALT CTRL + deletes to end of line.
 Configure File is flpl_statement_cfg.

Figure 3: A configuration file to print invoices.

contains header text; ~DATE causes the current date to be printed. ~SUBRECS and ~SUB_SUMMATION are of more interest to users who really want to get the most from the report generation operation. The first enables sub-records – those marked with * in a FlashBack file – to be printed.

A customer may have bought a variety of articles, at different prices and in different quantities, but the supplier may have chosen to put all those transactions under the same basic field headings, using the sub-record structure to differentiate between them. At print time, the ~SUBRECS command will bring out all the sub-records. ~SUB_SUMMATION is used to produce totals of amounts from sub-records. ~SUMMATION will give a "grand total" of all values printed for [V1], [V2] and so on as required; the totals are for the complete print run, however many invoices and customers that may cover.

Help screen

Essentially the same process as report generation, this function appears to be simpler. The supplied example has no calculation fields and only a few data fields, making it easy to understand. It is preferable to try to avoid putting data fields which may vary considerably in length in the middle of text lines, because short data entries can cause such lines to

be poorly-justified. Either keep the database field entries similar in length or put the field marker calling for them on a separate line.

Standard mailshots could be accomplished without pain, and quickly. If the template remains the same and only the contents of the database file alter, subsequent printouts require only selection of F1 from the menu, insertion of the appropriate _CFG file name, then the pressing of ESC.

This also is essentially the same process. It is an abbreviated mail-merge operation, with names and addresses but no text. Instructions are given for printing records several up on a page and you can make a template with several similar entries abreast, to match whatever stationery you have. By making use of the Pause option in configuration – effectively indicating that cut-sheet paper is being used – envelopes could be labelled in this way, by setting one record per page. Whether or not you can locate envelopes accurately enough in a reasonable time in your printer is a different matter.

There is nothing which cannot be overcome but there are a few areas where the user can have difficulty. Some references in the instructions are not clear enough – e.g., the template file referred to as REPORT_DOC was not on the supplied disc. The supplied example statement _DOC file did not correspond fully

'It would make life easier if the Report functions were a more integrated package.'

to the _LIS version of the same thing, causing some printing problems when a modified version was converted to _LIS form. Both those problems are being corrected.

Incorrect alignment of various printed areas may have been due to using different character widths in Quill, rather than to a fault in the report generation process. The printer driver routines are being modified slightly to avoid difficulties converting PRINTER_DAT files created by "awkward" users. None of the problems observed is likely to prove insurmountable for the experienced user and they may not make themselves evident to most users anyway.

To return to the initial question, was it worth it? It would make life easier for the user if the report functions were more of an integrated package, without the periodic hopping back into SuperBasic which is required, but it is perhaps asking too much to get that for £40. The revised FlashBack seems to me to be good value; with the Report Generator functions included, it is much more so. For existing FlashBack users the £15 upgrade price offer would seem too good to miss.

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SOFTWARE FILE

D-DAY Mark II

'With some pokes, blood, sweat, toil and tears, the transformation is unbelievable.'

Program: D-DAY Mk.II
Special Edition.
Supplier: CFH Services,
Cwm Gwen Hall, Pen-
cader, Dyfed, Wales
SA39 9HA.
Tel: 055934 574.
Price: £11.50 if you pro-
vide one disc or 3 Mdv's;
£13 disc provided; £16 3
Mdv's provided.



When I bought *D-DAY* by Games Workshop in its original form I was bitterly disappointed with the graphics and very slow action, so much so that I declared it unplayable and discarded it to a bottom drawer. What I did not realise was that it had been released unmodified in its 1985 early ROM form. Now with some judicious pokes and a great deal of blood, sweat, toil and tears on the part of Rich Mellor, Richard Alexander and many other testers, the transformation is unbelievable. This simulation now represents excellent value and it becomes a product of which I suspect few will tire.

It is now a very versatile strategy game allowing the following play formats:

One player against the com-

John Shaw takes to the tanks for a new version of a World War II adventure adapted for the QL.



puter; two players against each other, by post if required; choice of role play, i.e., Germans or Allies; A random 15- or 50-unit battle scenario; in the two-player mode, a user-defined army of between 10 and 50 units; four war zone scenarios.

Provided with the game is a useful, well-written 11-page manual. It contains all the necessary instructions, including drawings of the four scenario areas. In addition, a summary of all the modifications and updates is provided in the form of a 2,600-word Quill—doc.

As Alexander has suggested that some might wish to try postal war games, I shall start this appraisal with a description of the two-player - <F5> 50-unit user-defined variation of the game, as it is the one

suitable for this type of application. I shall refer in more detail to the manual as battle begins.

Message

The first message to appear on the screen is the question "Is a Ram disc fitted?" This is one of the new additions to make the program move with greater pace. On pressing "y", the screen changes and we are asked if we wish to load a previous game or a partially-saved game. This latter facility is used mainly for postal war games where your opponent will enter his battle position first. This is followed by the Sound On/Off option. Having made your choice you are presented with a dramatic picture of a Second World War tank.

That is followed by "1 or 2 players?" Entry of the figure 2 moves the menu on to request "Do you want a <F1> (15) unit or a <F5> (50) unit or a (U) (User Defined) Army?" I call up the <U> User version. The prompt then asks for my choice of army size. A cursor allows selection between 10 and 50 units. I choose 50. Then the whole of the available Battle Force is shown to me and again, by cursor, I make my choice.

What have we? A 'Cromwell Tank', Attack 70, Defence 60, Movement 12, Gunrange 14. A 'Mortar', Attack 75, Defence 20, Movement 0, Gunrange 16. and so on, through Shermans, M4-75s, bridgelayers, howitzers, infantry and many more.

Having made my selection, I can send the disc to my opponent for him to deploy his forces. He will then send it back and battle starts in one of the chosen scenarios: The Landing; Breaking Out; To Arnhem; Arnhem Invasion.

There is only one place to start - at the beginning. Occupying approximately half of the Landing screen is the Map Window. It seems to cover about one-tenth of the whole scenario area. Below that is that Information Window which provides the Action Menu. Alongside that is the Clock, together with a Bar representation of the army strength levels.

Dotted across the map are many weaponry symbols. By moving my cursor across each one and then pressing <F1> their identity is revealed. A quick glance at the manual



reveals their potential. One very noticeable improvement is the smooth pan/scroll ability and the facility to fast-scroll using the Alt and Shift keys. A press of <F5> brings up a picture of the whole scenario in miniature and it enables you to evaluate your overall strategy plan.

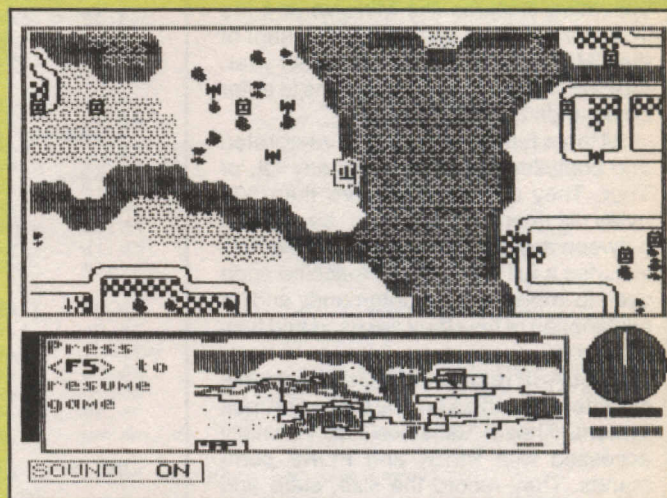
Automatic

Movement of units is simple; just position the cursor over, say, a tank, and the press <M>. You are then asked if you require Automatic movement - in a straight line - or manual. The directional cursors then enable you to re-position your Forces.

A similar procedure is followed when you wish to fire at an opponent. You choose your unit to fire and then the target; a keypress then sends a realistic gun-type noise and on the screen a line between the two units simulates the trace of the missile. You will be rewarded by a message "Target Destroyed" or "Damaged". If you

are over-optimistic you receive the warning "Target out of Range" or "Out of line of fire" i.e., Obstructions between.

The programming also caters for close combat; by



running your unit directly on the square occupied by an enemy one the strength difference is calculated and the winner decided by the computer.

One neat little addition to

the program is the 'hidden tank' facility by which in certain locations heavy armour can be camouflaged; thus the element of surprise can swing a small battle in the opposite direction. It is a very neat tactical trick to be used by more advanced players.

Disc

You then continue moving and firing until you are out of movement and firing points. You then send your disc to your opponent. Following his turn you are given the option of continuing or 'Surrendering' if things are getting very grim.

Everything seems to have been thought of, from the way the terrain slows progress to the clever method by which ships can transport tanks and

troops to gain tactical advantages.

This is a well-thought-out and extremely adaptable program which can be played in TV or monitor mode. The manual is clear and the simulation very playable in all of its forms and scenarios.

Alexander and his team have done a brilliant job, not only adapting the program but, much more important, user-testing the product until every bug was eliminated; I certainly could not find one.

I particularly enjoyed the user-defined mode which allowed for a great deal more thought to be put into the 'War Effort'.

Alexander has made himself a liaison man for postal gamers and a number have already accepted the challenge. He also offers some useful advice on tactics for beginners.



Each month Simon Goodwin adds new functions to QL SuperBasic. This month he takes on Frankenstein, showing an easy way to write programs which can edit or control other tasks.

DIY

TOOLKIT

This column introduces three new SuperBasic functions – SYSBASE, CHBASE and QUEUE%. SYSBASE makes it easy to write utilities compatible with upcoming systems like Minerva and the Thor. CHBASE is an improved variant of the CHAN functions introduced last year. QUEUE% allows Basic programs to enter commands into other tasks.

All three functions work with interpreted and compiled SuperBasic on any QL or Thor. They occupy little more than 300 bytes of memory and can be shared between any number of tasks. This article includes a full listing of the machine code used to implement the commands and an explanation of how they are used and how they work.

SYSBASE returns the memory address of system variables on any Qdos or Argos system. These 'variables' are normally accessed with PEEK and POKE commands. They record the size, state and location of important system tables elsewhere in memory. Later I give examples and references showing how access to system variables can be useful.

It is important that programmers should have a public, reliable way to find the system variables, or code may be incompatible with increasingly common special systems. Minerva has its own way to find the address via the new function VER\$(–2) but it does not work on other systems, so it is of no help in ensuring version-independence.

Variables moved

Many programs assume that the variables are at 163840, the most common case, but Thor and Minerva ROMs gain some advantages by moving the system variables elsewhere. Often program incompatibilities are caused by assumptions. SYSBASE should make such problems a thing of the past; the code may be used freely in public domain and commercial software.

System variables keep track of memory

QL WORLD DIY TOOLKIT – DECEMBER 1989 – LISTING 1, page 1 of 2.

* QL WORLD DIY TOOLKIT – BASE & KEY QUEUE FUNCTIONS

* Ver. 0.3, Copyright 1989 Simon N Goodwin & Phil Spink.

*

```
initialise lea.l    define,a1
            move.w  $110,a2
            jmp     (a2)
```

BP.INIT vector

*

* address = CHBASE or CHBASE(#chan) or CHBASE(index,tag)

*

```
chbase      moveq    #1,d0          Assume channel 1 at first
            cmp.l     a3,a5          Any parameters?
```

```
            beq.s     chan_sel
            move.w     $112,a2
            jsr      (a2)
```

Vector to get integers
CA.GTINT

```
            bne.s     bad_exit
            subq.w     #1,d3
            beq.s     got_one
```

Only 1 parameter?

```
            subq.w     #1,d3
            bne.s     bad_param
            move.l     0(a1,a6.1),d0
```

Only 2 parameters?

```
            addq.l     #4,$58(a6)
            swap       d0
            bra.s      got_id
```

No, too many, complain
Fetch tag and index

```
got_one      addq.l     #2,$58(a6)
            mulu       #40,d0
```

Tidy BV.RIP
Tag is top of a QDOS ID

```
chan_sel     add.l      $30(a6),d0
            cmp.l      $34(a6),d0
```

Channel table size
Add base offset

```
            bge.s     what_chan
            move.l     0(a6,d0.1),d0
```

Past end of table?

```
got_id       bmi.s     what_chan
            move.l     d0,a0
            lea.l      extopper,a2
```

Negative if closed
A0 is channel ID

```
            moveq     #0,d3
            moveq     #9,d0
            trap       #3
```

A2 -> extension code
Don't wait around

```
            tst.l      d0
            beq.s     return_fp
            move.l     d0,d1
```

SD.EXTOP key
Call QDOS ID system

```
            bra.s     return_fp
            bra.s     return_fp
```

OK, result is in D1

```
*          move.l     a0,d1
            moveq     #0,d0
```

Return error code

```
            rts
            rts
            rts
```

Return channel base
OK if we get this far

```
*          moveq     #-15,d0
            rts
            rts
```

BAD PARAMETER error
Error code is in D0

```
*          moveq     #-6,d0
            rts
            rts
```

CHANNEL NOT OPEN error

```
*          move.w     $116,a2
            jsr      (a2)
```

Count = 0 if successful

```
            bne.s     bad_exit
            subq.w     #1,d3
            bne.s     bad_param
```

Fetch CA.GTSTR vector
Get string parameters

```
            move.w     0(a1,a6.1),d5
```

Abort if unsuccessful
Check number of parameters

Abort unless only one

and other system resources. Windows and other 'channels' between programs and devices have their own variables, set up when the channel is opened and modified when data is sent or received. Another new function, CHBASE, works much like SYSBASE but returns the base address of window details.

CHBASE is an alternative to the DIY Toolkit CHAN functions, introduced in May, 1988. It is potentially faster and more flexible. It also allows some useful error-trapping, without stopping the program. CHBASE can return three special codes which tell you if the chosen channel is busy, or not a screen channel, or otherwise invalid.

Channel select

CHBASE lets you select a particular channel in three possible ways. If you do not specify a parameter, CHBASE tries to find the channel associated with Super-Basic #1 in your task. Alternatively you can supply an explicit Basic channel number or an internal Qdos channel identifier, which consists of an index and a tag.

The index is an offset in the channel table – part of the system variables – while the tag ensures that every channel has an exceptional identifier, even if a table entry is re-used. Qdos uses a similar scheme to keep track of tasks, as you can see from the output of commercial toolkit commands like JOBS and LIST_TASKS.

All parameters of CHBASE are integers. All channels on the system have a Qdos channel identifier, while Basic channel numbers are specific to a particular task. The CHBASE function returns -1 if the channel is 'in use' – probably waiting for input – whereas the CHAN functions would wait indefinitely. The result -6 indicates that the channel is not open or an invalid channel was specified.

This diagnostic information is particularly useful if you are writing a program which needs access to channel information set up by other tasks. At times like this channel-access functions can be vital, as there is no other way to keep track of the information used to set up the windows of another task.

You can use CHBASE to check whether a channel is a display window and react accordingly. This is particularly useful if you are writing a 'filter' task which must be able to send appropriately-formatted information to any device. Like PLOT, DRAW, PIXEL% and the CHAN functions, CHBASE uses the 'EXTOP' system call to find channel details. CHBASE returns -15 if the channel rejects the EXTOP call. This is normally good enough to sift out screen channels from the rest but the MEM device recently featured in DIY Toolkit also allows EXTOP.

It might seem that CHBASE cannot distinguish between a MEM channel and a SCR or CON channel. In either case it returns the base address of the channel

```

beq.s      return_int
lea.l      2(a1),a4
moveq      #1,d0
add.w      d5,d0
bclr       #0,d0
add.l      d0,a1
move.l     a1,$58(a6)

* (A6,A4) -> text, (A6,A1) -> space for result, D5= text length
*
moveq      #0,d0
trap       #1
move.l     $4C(a0),d0
beq.s      qchanged
move.w     $E0,a5
move.l     d0,a2
qloop      move.b 0(a4,a6.1),d1
           cmpa.l $4C(a0),a2
           bne.s  qchanged
           jsr   (a5)
           bne.s qfull
           addq.l #1,a4
           subq.w #1,d5
           bne.s qloop
qfull      neg.w  d5
qchanged   move.w d5,0(a1,a6.1)
return_int moveq  #3,d4
           moveq  #0,d0
           rts

*
* address = SYSBASE
*
sysbase    moveq  #0,d0
           trap   #1
           move.l a0,d1

*
return_fp  move.w  d1,d4
           move.l  d1,d5
           beq.s   normalised
           move.w  #2079,d4
           add.l   d1,d1
           bvs.s   normalised
           subq.w  #1,d4
           move.l  d1,d5
           moveq   #16,d0

*
normalise  move.l  d5,d1
           asl.l   d0,d1
           bvs.s   too_far
           sub.w   d0,d4
           move.l  d1,d5
           asr.w   #1,d0
           bne.s   normalise

*
* Check there's six bytes of space for the result
*
normalised moveq  #6,d1
           move.w  $11A,a0
           jsr    (a0)
           move.l  $58(a6),a1
           subq.l  #6,a1
           move.l  a1,$58(a6)
           move.l  d5,2(a1,a6.1)
           move.w  d4,0(a1,a6.1)
           moveq   #2,d4
           moveq   #0,d0
           rts

*
define     dc.w   0,0,3
           dc.w   chbase-*
           dc.b   6,'CHBASE'
           dc.w   qstring-*
           dc.b   6,'QUEUE%'
           dc.w   sysbase-*
           dc.b   7,'SYSBASE'
           dc.w   0
           end

```

O.W stacked, return at once
A4 -> text (A6 relative)
Find space used for text
D0 is length, rounded up
A1 -> space for an integer
Set BV.RIP for later

MT.INF trap key
Make A0 -> system variables
Get current queue address
If none, do nothing
Fetch IO.QIN vector
Set up pointer for IO.QIN
Get next character to queue
Has the queue changed?
If so, stop now
Queue the character
Error - queue must be full
Advance through the text
One less character to do
Loop till D5 = 0 (+/- !)
If D5>0, make it negative
Stack D5 in prepared space
Indicate integer result
Indicate no error

MT.INF key
Call QDOS manager
A0 -> system variables
D4 will be exponent
D5 will be mantissa
Zero is a trivial case
First guess at exponent
Already normalised?
No, halve exponent weight
Double mantissa to match
Try a 16 bit shift
Take copy of mantissa
Shift mantissa D0 places
Overflow; must shift less
Correct exponent for shift
New mantissa is more normal
Halve shift distance
Try shift of 8, 4, 2 and 1

No. of bytes needed
BV.CHRIX vector
Get safe A1 value
Grab 6 more bytes
Stack mantissa
Stack exponent
Floating point result
No procedures, 3 functions

details. You can distinguish the channel types by checking the length of the definition block; PEEK_L(CHBASE) is always 40 for a MEM channel and some larger value for SCR or CON. If all goes well, CHBASE returns a positive value, the address of the start of details for the channel. You can use PEEK to read channel details from the address and subsequent bytes.

Programs using CHBASE can be larger than ones using CHAN functions but they may also be faster and more fault-tolerant. This line uses CHAN functions to find the width of the window, in units of the current character-size:

```
ch_width% = CHAN_W%(#0,28) DIV
CHAN_W%(#0,38)
```


It looks similar when written with CHBASE:

```
temp=CHBASE
If temp<0 : COMPLAIN
ch_width% = PEEK__W(temp+28) DIV
PEEK__W(temp+38)
```

The second form is potentially faster when compiled with *Turbo*, despite the need for extra addition and a temporary variable, because CHBASE is called only once. Turbo does not call extension commands very quickly but it can generate its own fast code for PEEK and POKE, rather than call Sinclair ROM routines.

In general, the more you can avoid calls to external extensions the faster your task will run. This is why Turbo has its own way of handling *Turbo Toolkit* extensions and commands common to all QLs. Of course, the base address is 'historic' as soon as you have it. You run the risk that the channel might close after you called CHBASE but there are advantages to not calling EXTOP repeatedly.

Channel PEEK

Channel details do not move while it is open, so you can read channel information with PEEK, even if the channel is waiting for input, so long as it was not tied up when you made the initial CHBASE call to find the relevant address.

The CHAN functions could read bytes, words and long words but not decimal values. Turbo Toolkit owners can use CHBASE in conjunction with PEEK__F, giving a convenient way to read the floating point parameters set by SCALE. You can even POKE channel details found with CHBASE but it is usually better to use standard commands or traps to check parameters and avoid dangerous inconsistencies. Beware of wild POKES; you could clobber something vital unexpectedly if the channel has closed since the call to CHBASE and the memory has been re-allocated.

Offsets for SYSBASE and CHBASE have been listed in previous issues of DIY Toolkit, particularly in May, 1988 for channels and April, 1989 for system variables. A full list is on page 5-6, 60-61 and 159 of Andy Pennell's definitive *QDOS Companion*, available from TK Computerware.

QUEUE% is a function which types characters into any program just as if you had entered them manually from the keyboard. It derives its name from the fact that characters are held in 'queues' by the QL operating system and it returns an integer value to indicate how it fared.

Zero means success; it indicates that all the characters were queued safely without problems. Positive or negative values indicates the number of characters 'left over'. QUEUE% takes one string parameter - either a string variable, a string expression or a name in quotes. To see QUEUE% in action, try adding this

command as line 535 in *Taskforce*, then using it to load Quill:

```
×%=QUEUE% (CHR$(240) & 'DP70' &
FILL$ (CHR$(10), 2))
```

That command sets the page length in Quill to 70 lines as soon as it starts up,

with no need for you to type a thing. You can use SuperBasic to control or configure any task with QUEUE%.

The example queues some characters which cannot be typed directly into a SuperBasic line; CHR\$ (240) corresponds to 'F3' and FILL\$ (CHR\$ (10), 2) sends the code of 'Enter' twice. Character

QL WORLD DIY TOOLKIT - DECEMBER 1989 - LISTING 2.

```
100 REMark Sinclair QL World HEX LOADER
110 REMark by Marcus Jeffery & Simon N Goodwin
120 :
150 CLS: RESTORE : READ space: start=RESPR(space)
160 PRINT "Loading Hex..." : HEX_LOAD start
170 INPUT "Save to file...";f$
180 SBYTES f$,start,byte : STOP
190 :
200 DEFine FuNction DECIMAL(x)
210 RETURN CODE(h$(x))-48-7*(h$(x)>"9")
220 END DEFine DECIMAL
230 :
240 DEFine PROCedure HEX_LOAD(start)
290 byte = 0 : checksum = 0
300 REPEAT load_hex_digits
310 READ h$
320 IF h$="*" : EXIT load_hex_digits
330 IF LEN(h$) MOD 2
340 PRINT"Odd number of hex digits in: ";h$
350 STOP
360 END IF
370 FOR b = 1 TO LEN(h$) STEP 2
380 hb = DECIMAL(b) : lb = DECIMAL(b+1)
390 IF hb<0 OR hb>15 OR lb<0 OR lb>15
400 PRINT"Illegal hex digit in: ";h$ : STOP
420 END IF
430 POKE start+byte,16*hb+lb
440 checksum = checksum + 16*hb + lb
450 byte = byte + 1
460 END FOR b
470 END REPEAT load_hex_digits
480 READ check
490 IF check <> checksum
500 PRINT"Checksum incorrect. Recheck data.":STOP
520 END IF
530 PRINT"Checksum correct, data entered at: ";start
560 END DEFine HEX_LOAD
570 :
580 REMark Space requirements for the machine code
590 DATA 310
600 :
610 REMark Machine code data
620 DATA '43FA010E34790000','01104ED27001BBCB'
630 DATA '67263479000000112','4E92664C53436710'
640 DATA '534366422031EB00','58AE00584840601C'
650 DATA '3031EB0054AE0058','C0FC002BD0AE0030'
660 DATA 'B0AE00346C242036','08006B1E204045FA'
670 DATA '0010760070094E43','4A8067702200606C'
680 DATA '220870004E7570F1','4E7570FA4E753479'
690 DATA '000001164E9266F0','534366EA3A31EB00'
700 DATA '673E49E900027001','D04508B00000D3C0'
710 DATA '2D49005870004E41','2028004C671E3A79'
720 DATA '000000E024401234','E800B5E8004C660C'
730 DATA '4E956606528C5345','66EC44453385E800'
740 DATA '780370004E757000','4E4122083B012A01'
750 DATA '671C3B3C081FD2B1','691453442A017010'
760 DATA '2205E1A169049B40','2A01E24066F27206'
770 DATA '307900000011A4E90','226E00585D892D49'
780 DATA '00582385E8023384','E800780270004E75'
790 DATA '0000000000003FEF6','0643484241534500'
800 DATA 'FF4E065155455545','2500FF9C07535953'
810 DATA '424153450000','*',24017
```


codes are listed in the *Concepts* part of the QL User Guide. QUEUE% sends a single string, so the parts must be connected with '&', the string concatenation operator, rather than a normal QL separator like a comma or semi-colon.

The example assumes the system starts ready to enter text, rather than in the middle of a menu command, as keystrokes have different effects depending on the menu in use – e.g., COMMANDS and COMMANDS II in *Quill*.

It is wise to make sure that queued sequences leave programs in a known state when they are complete. The second CHR\$(10) returns Quill from the 'Design' menu to text entry. Any subsequent text character would be typed directly into the document.

The result X% should end up set to zero, to show that all the characters were queued successfully. It is a good idea to check this parameter later, particularly when queueing long strings, or the queueing task might get out of step with the one it is trying to control.

Even more fun

A negative value is the number of characters which could not be sent because the queue becomes full. In a multi-tasking situation you might wait a time for the task to digest some of the queue contents and send the rest later. The number of characters queued successfully can be found by adding the result from QUEUE% to the total length of the string of characters you hoped to send.

A positive result signals that characters could not be put into the queue for some other reason. Often this is because there is no channel waiting for input at the time the QUEUE% function is called. In this case the result is the total length of the parameter. While QUEUE% is emitting characters it is possible that the user might type Control C or some other command which swaps between input channels. In this case QUEUE% returns a positive number, the number of characters left untransmitted at the point the channel change was detected.

So long as you know the sequence of control keys used by program you can control it automatically with QUEUE%; It is possible to send Quill or any other package a stream of commands; you can set the page length, margins, footer and header, or write a command to enter F2 and type your address automatically.

Things get even more fun if you use one task to monitor characters typed by the user and arrange for QUEUE% to expand shorthand or translate codes. You can use QUEUE% to expand shorthand or translate codes. You can QUEUE% and SYSBASE together in function-key programs. PEEK_W(SYSBASE+138) reads SV_ARBUF, which holds the code of the last character typed. Use QUEUE% to send CHR\$(194) to delete the previous

character and replace it with any other sequences you choose.

Listing three is a simple demonstration which swaps the dash and underscore characters, so you no longer need to press SHIFT to type an underscore – a boon to lazy QL users. The code just loops looking for the relevant character codes. When it spots them it types-in a delete left code and the alternative.

Avoid a loop

The POKE in line 210 clears the buffer. This stops auto-repeat being necessary but is a simple way to avoid an endless loop as every dash is converted to an underscore, then converted back again, and so *ad infinitum*.

The INKEY\$ in line 140 introduces a short pause so that this task does not hog all the processing time when you run it in Basic alongside another task. You can get a similar effect by compiling the loop and giving it a low priority or arranging for the code to suspend itself every so often.

A task could use this technique in conjunction with CHBASE to make the TAB key work in the SuperBasic editor. The code must start by calling CHBASE for SuperBasic channel #0 (Qdos identifier 0, 0). This must be done while channel #0 is not waiting for input. Once the task has found the details of channel #0 it can monitor SV_ARBUF for 9, the code of TAB. The channel details tell it the cursor position and the width of the window, so the task can determine the number of spaces which must be queued to advance the cursor to the next tab stop.

Many readers have asked for some way to evaluate an expression, held in a string, as a program runs. You can do this by writing the string to a file and MERGEing the file with the current SuperBasic program – but MERGE is slow and buggy.

QUEUE% is an alternative to MERGE, faster and much less likely to crash the machine. Self-modifying Basic may seem anathema but anyone used to EVAL on the BBC micro or VAL on the Spectrum

will miss the facility to evaluate an expression stored in a string. Now you can do this in interpreted SuperBasic by using QUEUE% to type-in a new program line, followed by a GOTO or RUN command. Do not forget the CHR\$(10) at the end of each line, so it is entered automatically.

Use an INPUT from channel zero before you queue the new line. This ensures that the command channel is selected as the 'current' queue. Put STOP on the next line, so that Basic halts, ready to read the next command, which should be the text entered by QUEUE%.

GOTO, RUN or CONTINUE can be queued to re-start the program. It does no harm to see what is happening as you develop this kind of program but you can always set the ink colour to match the paper if you find the display of commands distracting. This technique is not available in compiled code. The whole compiler would need to run every time a string was evaluated. The parameter would have to be parsed, coded, evaluated and linked to the variables and functions in the remainder of the task. The easier this is the more like an interpreter and the less like a compiler the language must be. Even Archimedes Basic compilers do not support EVAL, although it is allowed by the Acorn interpreter.

Powerful applications

QUEUE% can do almost anything you can do from the keyboard, so some very powerful applications are possible. The only characters you cannot send with QUEUE% are CAPS LOCK, CTRL-F5 and Control C. They are all intercepted by the ROM en route from the second processor and never reach the keyboard queue.

These keys work directly on the system variables. You can set or cancel CAPS LOCK and CTRL-F5 – to pause the screen – from a program by setting or clearing the bytes at address SYSBASE+136 or SYSBASE+51, respectively.

POKE SYSBASE+51, 255 stops dis-

QL WORLD DIY TOOLKIT DECEMBER 1989 – LISTING 3.

```
100 REMark DIY TK SYSBASE QUEUE% demo
110 :
120 sv_arbuf=SYSBASE+138
130 REPEAT poll
140   key$=INKEY$(2)
150   last_key=PEEK_W(sv_arbuf)
160   SELECT ON last_key
170     =CODE(' - ') : key$=' _ '
180     =CODE(' _ ') : key$=' - '
190     =REMAINDER : NEXT poll
200   END SELECT
210   POKE_W sv_arbuf,0
220   dummy%=QUEUE%(CHR$(194) & key$)
230 END REPEAT poll
```


play output, just like pressing CTRL-F5. Control C cycles the address at PEEK_L (SYSBASE+76) to point to each valid keyboard queue in turn.

As ever, the code for the new functions is listed in two forms. Listing two gives you a quick way to enter the code without using an assembler. It loads the equivalent machine code from DATA statements and saves the code in a file. Once you have loaded that file, as follows, you can use CHBASE, SYSBASE and QUEUE% in your own programs:

```
base=RESPR (318) :
LBYTES "filenames", base :
CALL base : NEW
```

The first part of listing two is Marcus Jeffery's standard loader, used in every month's DIY Toolkit project. Only the DATA, from line 590 onwards, changes from month to month.

Listing one is the corresponding assembly code program, written assembled using HiSoft DevPac. Type this text into your assembler if you want to customise the code or merge it with other routines. You may need to add semicolons before the comments if your assembler is pedantic about such things.

As usual, the START routine calls BP_INIT, the ROM vector which adds new commands to SuperBasic. The table

labelled DEFINE indicates the names and addresses of the commands.

CHBASE and SYSBASE use familiar 'building blocks' in their codes. CHBASE starts by checking its parameters, assembling a system channel identifier in register D0. Basic channel numbers are read from the channel table maintained by the interpreter or compiler.

The channel ID is copied to A0 and passed to the system via the EXTOP call. If this is accepted the code of 'EXTOPPER' is called, as if it were part of the operating system. A0 contains the base address of the channel details and D1 is returned to the calling program, so EXTOPPER copies A0 to D1 and returns.

D1 holds a long integer address which cannot be returned to Basic directly, so the familiar 'RETURN_FP' code converts it to floating point form. SYSBASE is even simpler as it has no parameters. It calls MT.INF, the 'manager trap' which returns system information. This leaves the start address of the system variables in A0, ready for conversion.

QUEUE% starts by calling CA.GTSTR to fetch a string parameter on to the Maths Stack, addressed by 0 (A1, A6.L). Names must be in quotes or you will get an 'error in expression' report.

The word at the top of the stack is the length of the string, followed by the characters. If the length is zero we can return at once, as an attempt to queue

zero characters should be no problem and zero is the 'happy' returned value.

Otherwise we use A4 to keep track of the text, two bytes on from the length, and round up the length to the next even value with BCLR and ADD. String text always starts at an even address on a QL system, so the preceding length word may be read with a single instruction.

If the length of the string is odd QUEUE% you must be careful to de-allocate an extra byte or it will not have an even address for the result when the string has been discarded. Notice that the LONG value of D0 is added to A1. The maximum string length is 32,767, which rounds up to 32,768, too large to fit a signed word. If I wrote ADD.W D0, A1 and the length was incremented from 32,767, D0 would be treated as minus 32,768.

Once the stack pointer BV.RIP points at a two-byte space for the result, we call MT.INF to find the system variables and hence the current keyboard queue. The queue address is held in SV_KEYQ, at offset \$4C among the system variables.

IF SV_KEYQ holds zero there is no channel waiting for keyboard input and QUEUE% returns D5, the total length of the parameter. Otherwise it fetches the address of the vectored routine IQ_QIN and puts characters into the queue one by one, until D5 counts down to zero, SV_KEYQ changes or the queue becomes full.



© FLEET TACTICAL COMMAND

"A New Concept"

Overview:

Fleet Tactical Command is a realistic new, sophisticated, Real Time 3D Naval Strategy game written entirely in machine code that is aimed at an older user.

It has been designed to be played between two computers via network, serial or modem links or may be used on a single computer (for practice perhaps).

The programme will run on a basic 128k QL.

The comprehensive two user package includes an instruction manual, navigation aids, a selection of charts, Scenario Logs etc., and automatic free FT-CommClub registration for 1 year.

Over a period of time the package will become available on other popular computers, the object being that any combination of two computers may be used.

The Scenario:

Set in a 1000 x 1000 square mile expanse of ocean within which there are two anchorages initially used by yourself and the enemy, and two neutral anchorages with repair/replenishment facilities.

It is a time of international conflict. Your shipping is being repeatedly harassed within these waters. The Government has declared a Total Exclusion Zone for this area. You have received a signal from Admiralty commanding you to take any necessary measures in order to enforce the Exclusion Zone and thus taking control of all anchorages.

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* Submarines are able to dive and have an operational periscope.

Ship's Armament:

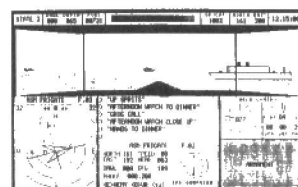
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Expiry Date: _____
Signature: _____



SUPER BASIC

I The QL is capable of some spectacular graphics. Mike Lloyd begins a detailed investigation and produces examples of what can be achieved.

Computer graphics are rapidly becoming an art form in their own right, even to the extent of being the subject of international competitions. At a slightly lower level, the quality of screen displays produced for competitions run by *Sinclair QL World* have generally been impressive and occasionally breathtaking. Even novice programmers can produce fascinating patterns quickly on their computer screens.

The keys to developing good graphics are an understanding of the QL graphics environment and a knowledge of the simplest SuperBasic programming rules. Although the most startling visual effects on a computer are often the product of complex mathematics, it is also true that many of the best ideas are also the simplest. Computers are usually best at doing relatively simple things repetitively and many of the examples used to illustrate this series take advantage of that fact.

Pixels

Before starting on our works of art an examination of the canvas on which we are to work and the paints and brushes at our disposal is in order. The fundamental building block of any computer graphic is the pixel, or picture element. A pixel is a dot on the monitor or TV screen which can be coloured any of the eight shades available on the QL, provided the display mode permits it. Everything on a QL screen display is formed from pixels, from a Chess game to a Quill document.

In Mode 4 there are more than 130,000 pixels in a QL display, arranged in 256 lines of 512 dots. Each one is continually being refreshed at the rate of 50 times a second to produce what looks to us like a static picture. Mode 4 is the QL high-resolution mode; in Mode 8 each line has only 256 pixels. Some computers have much lower screen resolutions, such as 192x256 pixels on the Spectrum and 160x256 on the BBC in Mode 2 and Mode 5, but more modern computers have even higher resolutions than that

offered by the QL. For the computer to refresh the pixels it must have a means of knowing what colour they are. That information is kept in what is called a 'screen-map', an area of memory reserved for a binary representation of what is currently appearing on the screen. Every one-fiftieth of a second the screen map is perused by the computer and appropriate signals are sent to the monitor to TV to produce the required display.

Screen map

If the QL were to have a monochrome mode pixels could be either "on" and bright or "off" and dark. Those states could be represented directly in the screen map as the ones and zeros of the binary counting system. With the addition of colour information, but the situation becomes slightly more complex. To handle four colours, as in the QL high-resolution mode, it takes two bits in the screen map to represent every possible state of a pixel. For the eight colours of the

QL low-resolution mode three bits are required. Sixteen colours could be obtained with a ratio of four bits per pixel but, for the QL, the fourth bit associated with each pixel determines whether or not the pixel is to flash.

Whether the QL is handling lines of 512 pixels with four colours or lines of 256 pixels with eight colours the same amount of memory is required for the screen map - 32KB. Remembering that the total RAM space for the BBC microcomputer was 32KB it can be seen that for its time the QL had a very high-resolution screen.

Subsequent computer designs have tended to have larger RAMs fitted as standard, allowing more space to be devoted to the screen maps. To process information at an adequate rate they have either had ultra-fast CPUs or the CPUs have been supported by chips devoted solely to managing the screen.

It is feasible but complicated and not a little dangerous to affect the screen display by POKEing values directly into the QL screen map. It begins at byte 131072 and ends at byte 163840. The



following routine, eventually will paint a black screen:

```
100 FOR X = 131072 TO 163840
110 POKE X, 0
120 END FOR X
```

Poking different values into the screen map can produce bizarre effects which indicate that the relationship between the bits in the screen map and the pixels on the monitor display are not so straightforward as it might at first appear. Fortunately, there are plenty of SuperBasic commands which can translate requests for different colours and shapes into the correct format for the screen map.

Central to the graphics environment on any computer is a co-ordinates system which identifies where on the screen a particular pixel lies. Two values, or vectors, are required to describe the location of a pixel – how far from the left of the screen and how far from the bottom of the screen it is. This is directly analogous to map-reading co-ordinates and is often known as the Cartesian co-ordinate system.

The simplest graphics command, and one perhaps more overlooked than it deserves, is POINT. It lights a pixel in the current INK monitor. It takes a minimum of two parameters which describe the location of a pixel in Cartesian terms but it can be followed by any number of pairs of co-ordinates. The following program draws a triangle using only the POINT command:

```
100 FOR A = 10 TO 40: POINT A, 10
110 FOR B = 10 TO 40: POINT 40, B
120 FOR C = 10 TO 40: POINT C, C
```

If you have had difficulty in following the concept of graphics co-ordinates, this simple program may be all you need to gain that flash of insight which will clarify matters.

Triangle

By running the program it can be seen that the triangular shape is not solid but outlined with dots. By changing the size of the main display window the distance between the dots can be varied. That reveals that the graphics co-ordinates system does not equate exactly to the pixel co-ordinate system.

Given that sometimes there are 256 pixels on each display line and sometimes 512 it is easy to see why the QL designers decoupled the graphics co-ordinates from the pixel co-ordinates. If they had not done so, a circle in Mode 4 would look like an ellipse in Mode 8 and a square in Mode 8 would become rectangular in Mode 4. The unusual QL pixel shape would add to the distortion.

The pixels on a QL are not square but elongated vertically, so 100 graphics units horizontally would not equal 100 pixels. That can be proved readily by opening a window 100 pixels square and declaring a one-pixel border; the resulting shape is a tall rectangle. A better approximation to a

square is a window 140 pixels wide by 100 pixels high.

Having been forced to produce an independent graphics co-ordinates system the QL designers made the most of the advantages which the decision offered. First, they permitted different scales to be declared. By default, the vertical measurement of any window represents 100 arbitrary graphics units. Only if the window happened to be 100 pixels high would one graphics unit equal one pixel.

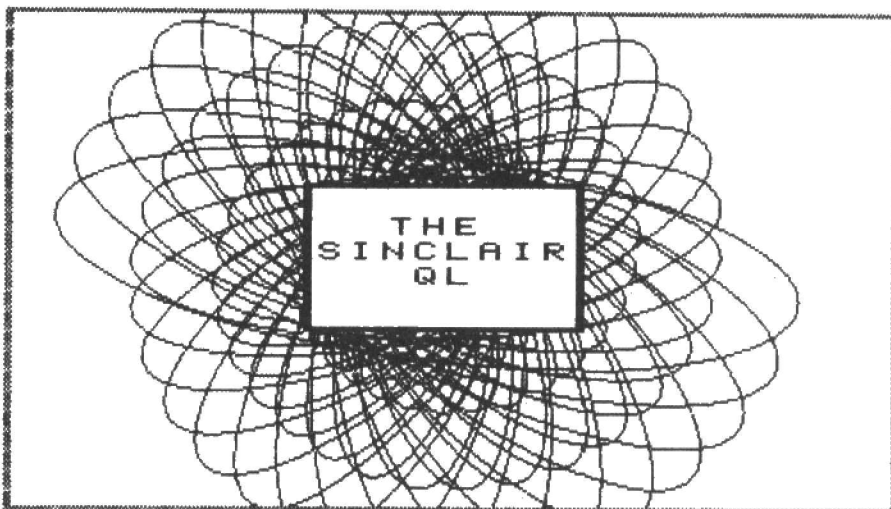
Second, they allowed programmers to move the graphics origin – the point on the screen with the graphics co-ordinates of 0, 0 – to any position relative to the pixel

might seem to be impossible on all but the most expensive graphics workstations.

Concentric

The patterns produced by the program are formed from concentric ellipses which rotate as they grow. The clever point is that they appear to be rotating "behind" a central window area which displays a small-scale copy of the larger pattern.

The program reveals the trick – the "outer window" is four windows carefully-positioned and scaled so that they appear to be one window. The central window contains the same pattern as the outer



origin of the window. That could be a point on the screen but it could just as easily be an imaginary point outside the boundaries of the window.

The best way to imagine this is to think of the screen window opening on to a high graphics landscape. By looking through the window just a portion of the whole view can be seen. By changing the graphics origin the effect is to move the landscape so that the window opens on to a different part of it.

Those facilities are bound up in a single command, SCALE, which takes three parameters. The first represents the number of graphics units which make up the height of the window. The following pair represent the graphics co-ordinate of the bottom left-hand corner of the window. The command:

```
SCALE 100, 0, 0
```

will therefore restore a window to its default scale setting. The command:

```
SCALE 200, 50, -50
```

will halve the graphics scale and reposition the window origin to a point 50 graphics units to the right and 50 units below the graphics origin. The listing accompanying this article uses the command to simplify the code required to produce what to the intelligent observer

area but it could be replaced by, say, a company logo or a slogan for an advertising display.

It is possible to use the POINT command to produce circles and ellipses but SuperBasic is far too slow for it to be efficient. The language instead includes a command for drawing circles and ellipses, both identical in format and functionality. It has two keywords, CIRCLE and ELLIPSE. Which you can use is a matter of taste.

The QL needs three parameters to draw a circle – two graphics co-ordinates to identify where the centre of the circle will lie and the radius of the circle. Assuming the default scale in the display window the command:

```
CIRCLE 50, 50, 50
```

will draw a circle which touches the top, left and bottom sides of the window. Whether or not the circle touches the right-hand edge of the window depends on the width of the window. Changing the display mode and re-sizing the window will not alter the location of the circle in the window.

Ellipses are also produced with the CIRCLE keyword provided that two further parameters are added to the command. The first describes the eccentricity of the ellipse, i.e., how distorted a circle it is. The value is the ratio of the

furthest distance between edge and centre – the “major axis” – to the shortest distance between edge and centre – the “minor axis”.

A value of one will produce a perfect circle, the “major axis” and the “minor axis” being the same length. An eccentricity value of zero will draw a straight line. All degrees of eccentricity can therefore be defined by declaring an eccentricity value between 0 and 1.

The final parameter for an ellipse describes in which direction the major axis is to point. Values representing all possible angles lie within the range of zero to twice pi, very approximately 6.25. The reasons will be explained later in the series.

The graphics shown in the screen dump at figure one are formed from a family of ellipses sharing the same eccentricity and centre. As the size of the ellipse increases the angle of the main axis swings to produce a pleasing whirl. The program repeats itself forever, changing only the ink colour. Be warned that occasionally the ink colour will be the same as the background colour and the whirl will become invisible.

● Next month, *SuperBasic* delves deeper in the QL graphics environment and delivers more displays to decorate your screen.

```

100 MODE 8
110 OPEN#3, con_: OPEN#4, con_
120 OPEN#5, con_: OPEN#6, con_
130 WINDOW 448,200,32,16: CLS: BORDER 2,2,7
140 WINDOW 140, 60, 182, 84
150 WINDOW#3, 294, 68, 182, 17
160 WINDOW#4, 154, 129, 322, 85
170 WINDOW#5, 288, 70, 34, 144
180 WINDOW#6, 148, 128, 34, 17
190 SCALE 320, -200, -130
200 SCALE #3, 68, 0, 60
210 SCALE #4, 130, 105, -71
220 SCALE #5, 70, -110, -71
230 SCALE #6, 129, -110, -74
240 REPEAT Whirl
250   C = RND (256)
260   INK (C + 17) MOD 256: INK#3, C
270   INK#4, C: INK#5, C: INK#6, C
280   FOR Size = 40 TO 140 STEP 2
290     FOR Ring = 1, 3 TO 6
300       CIRCLE#Ring, 46,30, Size,.3, Size/10
310     END FOR Ring
320   END FOR Size
330 END REPEAT Whirl

```

text⁸⁷

The new Version 3.00 for the '90s

text⁸⁷ Version 3.00 builds on the performance and reliability of previous versions to offer today's state-of-the-art environment for document production. There is simply no comparable product for the QL, and in many respects it out-performs industry-standard PC word-processors. This fast, versatile program has been vastly enhanced, taking into account many suggestions from already satisfied users, to offer more power and flexibility for the occasional user and the professional alike.

- ★ Integrated spell-checker finds spelling errors in any part of the document being edited and allows you to browse into its dictionary and modify the offending word in context. Spell-checking is performed at the rate of about 200 words per second. In addition to the 40,000+word English, French and German dictionaries supplied as standard, Dutch and Italian dictionaries can be made available on request, allowing correction of multi-lingual texts. You can easily build up your own additional specialist dictionaries or add words to the standard dictionary by loading and checking your existing documents.
- ★ The user interface has been enhanced even further. More information is provided on the screen on menu selections and current program settings. As an example of improvements, when a number is requested, the default value can be selected with a key-press instead of entering the whole number.
- ★ More flexible editing and text manipulation options. Documents can be merged with one command. Text attributes can be globally modified (for example change all or selected underlined text to italic). Easier control of pagination and layout especially for long documents.

All the above are improvements to an excellent program with many advanced and user-friendly features developed over the years. **text⁸⁷** Version 3.00, as its predecessors, is still the vital upgrade for any QL system.

founttext⁸⁸, the flexible graphic printer driver for **text⁸⁷** offers 32 high-quality founts in different styles and sizes up to 72 pixels high. You can use graphic founts without the limitations in text editing and document size imposed by other desktop publishing programs.

founted⁸⁹, the graphics editor for **text⁸⁷** and **founttext⁸⁸** allows you to create founts of up to 84 x 96 pixels and capture screen images to produce picture founts for use with documents.

2488, the state-of-the-art dedicated text-mode printer drivers for Epson, NEC and Star 24-pin printers. With these drivers, **text⁸⁷** is the only QL program that can use the advanced features of 24-pin printers such as multiple type-faces, proportional spacing, micro-justification, double-height, double-width shadow and outline modes.

typeset⁸⁹, includes a range of drivers for laser printers. Please write for details. **text⁸⁷** requires at least 128K memory expansion (256K with **founttext⁸⁸**).

An independent telephone support service including an excellent step-by-step tutorial disk is available from Mr Terry Harman on 0604 842875.

Software is available in English, French and German

text⁸⁷ V3.00 £60 **founted⁸⁹** £15 **founttext⁸⁸** £25
Complete edition: **text⁸⁷** + **founttext⁸⁸** + **founted⁸⁹** £95
2488 £15

Upgrades to text⁸⁷ Version 3.00 cost £20 (add £5 if you order by credit card). Please send all your master disks for upgrade to the latest version (an additional manual will be sent to you with the upgrade). Send the text⁸⁷ manual as well if your version is older than 2.00 (versions supplied during 1988). State where software was bought. Prices are inclusive of airmail worldwide. Payable by cheque, postal order, Eurocheque or credit card. Please specify language, cartridge or disk system (3½" and 5¼" disks, single or double sided, 80 or 40 track, can be supplied). Send your order to Software⁸⁷, 33 Savernake Road, London NW3 2JU, UK.

Software⁸⁷
33 Savernake Road,
London NW3 2JU

FANCY STUFF

Part one

It depends how fancy you want to get but do not abandon your old faithful without going it a full investigation. The chances are you use Quill and there is a fair amount of potential in that. Look at the print sample in figure one. It is of a piece of text prepared with Quill; to save space, we have not included the prints of the same text prepared with *The Editor* and *text*⁸⁷ but they look essentially the same. The text is partly in two columns, there are two basic character fonts, with six horizontal character pitches and five character-style enhancements.

Another two pitches could be added but were not incorporated into all the printer drivers used. All these can be produced on many dot matrix printers and any of the programs mentioned, except *Professional Publisher*, can provide all the printer drivers used. All these can be produced on many dot matrix printers and any of the programs mentioned, except *Professional Publisher*, can provide the required printer driver information to do this. The reason for the latter program being the

Bryan Davies looks at the potential for mixing fonts and doing typographical tricks on Quill, *The Editor* and *text*⁸⁷.

odd one out is that it prints everything in graphics mode, using its own character fonts instead of the printer fonts; careful selection of fonts from those supplied with the program could result in a print similar to figure one.

There was not much to choose between the prints from the three programs so, if mixed sizes and styles, together with simple columns, is all you require, you do not have too look further

than Quill, you 'free' word processor. I would lie if I said I used Quill for any job. To a point, it is not difficult to get simple DTP effects from Quill but going beyond that point can entail tremendous expenditure of time and effort and much frustration.

Purpose

Having said that, the purpose of this article is to give some ideas on how relatively simple non-standard print effects can be obtained with any of these four popular programs, not to make recommendations about what to use to replace Quill.

The text shown in the print is not at all "professional" – no-one with an eye for appearance will mix so many sizes and styles on one page – but it illustrates how much mixing is possible. It is based on a translation of a German sales brochure and formed the basis for the English version of that, so it is "real".

Work backwards from your printer. How many basic fonts has it? If you do not know what a font is, you are far from alone and the word is often abused. As a rough

Figure 1: Text prepared with Quill.

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design '90

Perhaps you know well what your dream kitchen should look like, what functions you want in it. You will find what you want in our versatile Build-In Appliances Programme. Up to the latest technical level, and of the best, branded quality.

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Refrigerator-freezer combination, 635 l gross capacity, 200 l usable capacity incl. 10 l freezer, electric -ity consumption 10 kWh in 24 hours per 1.5 l usable capacity.

Call your nearest Double Dealer today !?

(All offers subject to availability & viability)

'Do not abandon your old faithful without giving it a full investigation.'

guide to its use, a font is a set of printable characters of a defined shape. That is, it will usually contain A-Z, a-z, 0-9 and punctuation marks.

Each character will have a specific design, which will detail features such as curvature of individual strokes – as the tail of a 'g' – relationships of descenders – parts below the line – to the body of characters; accentuation – as in a bar across the down stroke on a 7; and presence or absence of serifs – the end-pieces at the top and bottom of characters. The size of the overall set need not be specified but the relative size of each character to the others will be. There can be enlarged and condensed versions of the same font, which may be a blown-up or narrowed-down form of the same set –

although DMP characters are typically all the same height and size changes are usually in the width only.

A simple printer may have only one font, called something such as Pica, Courier or Elite, but the horizontal spacing of the characters will be variable, to make it appear that there are several fonts available. The Epson-compatible type of printer typically has this one basic font, plus NLQ – near letter quality – which has more stylised characters and is a separate font. Sizes are specified in characters per inch horizontally and the basic font can be expected to be printable in about eight sizes. They are the standard (default) 10cpi, to which I refer as Pica and the next-smaller version, 12cpi (or Elite) plus variants of the two; 10-pitch men's the same as 10cpi. Enlarged Pica (double width) is 5cpi, enlarged Elite is 6cpi. Condensed Pica is 17.14cpi; medium Pica, a combination of enlarged and condensed, is 8.57cpi. This leaves two more to be accounted for, the proportionally-spaced forms of 10 and 5 cpi – roughly 11 & 5+cpi. NLQ uses four of the same sizes – basic 10cpi, enlarged 5cpi, and the proportionally-spaced versions of these, at 11 & 5+cpi. This is not a

'Once you understand what the printer can produce, consider the enhancements available.'

rigid rule and your printer may have somewhat different sizes and fonts but the principle of operation is much the same.

Once you understand what the printer can produce in the way of fonts and sizes, consider what enhancements of the basic fonts are available. Typically, you can get bold (in two forms), Underlined, Italicised, Superscripted and Subscripted. Remember, we are looking at what the printer can do unaided; the WP software may be able to instruct the printer how to produce other enhancements, such as double underlining, "red lining", or "striking out" but they are outside the scope of what is being discussed.

The five forms of enhancement will usually be applicable to both the basic font and to all the sizes of it. Note that proportional spacing is not included in this category, because it is generally applicable only to 10 and 5cpi characters; it cannot be 'tacked on to' whatever font/size is currently in use.

A word on choice of size is appropriate. The basic 10 cpi – "computer print" – is not too pretty. It is simple and can be printed fast but it suffers from a lack of quality appearance. One reason is the apparently uneven spacing between pairs of characters. The spacing is regular but

YOUR DREAM KITCHEN !!!

```

      I^design '900
{^Perhaps you know well what your dream
  ^Kitchen should look like, what functions
  ^you want in it. You will find what you
  ^want in our versatile @Build-In
  @Appliances Programme.^ Up to the
  latest technical level, and of the
  best, branded quality.@
@
      { Luxury Class
      { refrigerator
      { and freezer
      { were honored
      { in the ^Design
      { ^Selection '9
      { survey by the
      { Design Center.
      I^Nipissing@
  
```

Integratable Luxury Class@

@BB 230 E@
Compact cooker hood,
9 fan speeds, slide
switch, ^transparent@
air guide, in Brown

@MM 635 CS1@
^Refrigerator-freezer@
^combination, 635 l@
^gross capacity, 200 l@
^usable capacity incl.@
^10 l freezer, electric@

MODE: INSERT
TYPEFACE: Normal

WORDS: 138

LINE: 2 PAGE: 1
DOCUMENT: "qlu50"

Figure 2: Screen dump sharing uneven spaces.

we are used to reading print which has irregular spacing to remove unsightly gaps which would otherwise appear between certain character pairs, such as 'rm' and 'la'.

The proportional spacing function adds some intelligence to 10cpi, removing the gaps; it is, therefore, better to look at. It also takes rather less horizontal space and more text can be fitted into a given area. A disadvantage is that the DMP printer has a rather contrived action when producing proportional print and is slower than with normal "draft" (10cpi).

Compromise

A good compromise is 12cpi, which makes the gaps look less obvious and allows 12/10 = 1.2 times the number of characters per line, compared to standard 10 cpi Pica. It is a matter of taste but I think most people reading printed pages would find the appearance of 12cpi text more acceptable than 10cpi and it certainly reduces the length of letters. NLQ is provided in an effort to get closer to the quality of typewriter print but it rarely gets very close; recent printers offer LQ, which is better. Where presentation matters, NLQ may be essential but it is much slower to print than either basic 10cpi or 12cpi and it does not usually support

certain enhancements – condensed, bold (neither emphasised nor double-strike), superscript, subscript.

As the process of creating NLQ characters is a double-strike one, the lack of bold may be unimportant generally but it means that you cannot differentiate between headlines and normal text of the same size. The stylised appearance of NLQ makes it look rather odd alongside Pica or Elite and it is perhaps preferable to leave NLQ for use in letters on its own.

The difference between the two methods of creating bold does not really matter to the user but you have to be aware that certain sizes may accept only one method or the other. Emphasised tends to be usable only with 10 or 5cpi and not to work with 17.14/12/8.57/6cpi. If you set this form of bold and try to get, say, condensed Pica size, you are likely to find the resulting characters are a different size – normal Pica in this case. Double-strike bold is a better bet, as it normally works with any size apart from those which are constructed by a double-strike operation anyway.

Sufficient should have been written in previous articles about setting-up the printer driver but I do not doubt that some users still have problems with this task and want more comment. If you wish to be able to call all the mentioned typestyles from within a Quill document, you will have to be sparing in your use of the Translate function. With only 10 Translates available you cannot afford to indulge in luxuries and I regard using separate Translate entries for switching-off each enhancement as a luxury.

Use just one entry to switch off everything which can be set by the other five excepting any which are simple code translations such as used to produce the £

'You have to rely on visualising what each printer code will do to the style.'

sign. If you do not use superscript and/or subscript, re-assign those key combinations to functions you use – italic, for example. Experiment with a few code conversions and see how the printer reacts.

Translates

The “embedded” control codes – F4+ U/H/L/B – are the only ones you can use without having non-printing characters appearing on-screen. Any others you specify with Translates will appear and occupy line space on the screen. The printer will remove them when it receives the translations and this action messes right justification. For each code removed the following text moves one character to the left. This may present no problem with only the odd code per line but a bunch of codes on a line will make the printout look

produce good-looking columns on the screen but the printed result may be all over the place when different character sizes are used, in either column. The screen has no idea what the printer codes signify, so it displays them as normal-sized characters. The fact that one Space may be twice the size of another is unknown to the screen driver routine.

Once you insert the code for a different character size, following spaces are – to the printer – the width of that size. Say your first line in the first column is a heading, typed in 10cpi and the first line – directly to its right – of the second column is text from the body of a paragraph in 12cpi. The space between the right end of the first column and the left end of the second column will not be an even number of 10cpi spaces if you set the character size of 12cpi immediately after typing the 10cpi heading. Without a fair

before the text re-starts, to allow for possible need to delete spaces at the new size.

What of the sample text? At a guess, I made 50 or more changes in position to get the various parts aligned as they appear on the print. The screen dump shows where the text was on the screen to produce that sensible print. It took 13 attempts to get the print correct; in fact, the alignment was still not correct but I ran short of patience. Note the varying positions of the printer codes between the upper column and elsewhere; it was necessary to use both “10cpi spaces” and “17cpi spaces” to get the correct alignment of the left side of the second column. My handling of Quill work is no longer fluent and some of the messing about would not have been necessary when I was in my prime for using the program. Even so, more than an hour for one page is not exactly what I call being productive.

This program makes no pretence to WYSIWYG screen presentation. You have to rely on visualising what each printer code will do to the style and position of the following text. In many respects, laying out the text is much the same problem as with Quill but you have the facility to compose columns separately and then move them into position using the Column Block Move command.

Aligned

When alterations need to be made to large columns they can be “taken down again”, altered, then put back into place. The same comments as for Quill apply when trying to get text aligned correctly. Always try to bear in mind how wide your current Spaces are. A feature which might cause some puzzlement at times is that the order in which enhancements are called for by printer codes can be important; putting Bold before Italics and Medium Pica causes my printer to ignore the Bold. One of the best things about The Editor, compared to Quill, is its speed; do not spoil the feature by working in Document mode, which slows operations a good deal. Wait until you have virtually finished the document before switching to Document mode to check page lengths.

The sample document took much less time to produce than the one with Quill but that was in part due to the re-learning which had taken place during preparation of the Quill document. The manipulation involved was much the same. I managed to get a good printout in only eight attempts this time. The screen dump in figure three shows a similar state of the text to the Quill dump, perhaps somewhat less ragged. Do not assume I am proposing either layout as the way to do the job; the printer codes could have been placed differently in both programs and it would have been possible to make the screen look more like the prints but I did both as quickly as I knew how.

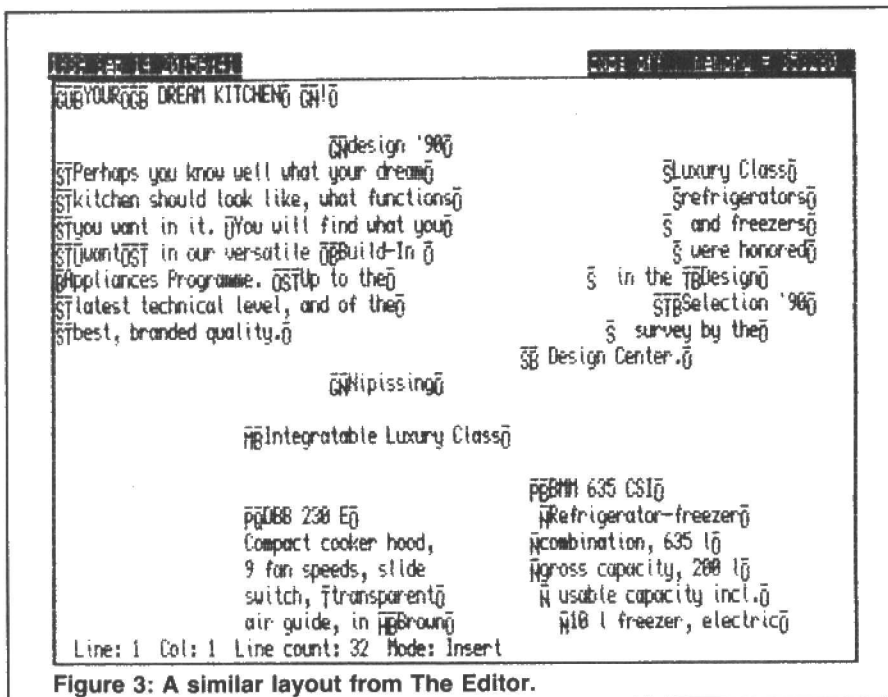


Figure 3: A similar layout from The Editor.

unacceptably odd. You can compensate for this by inserting a Space character into the conversions of the enhancement codes; this will mean two spaces instead of one between words but it will pad out the line to a normal length. Alternatively, you can figure how much a line will be shortened as you type it and introduce extra spaces directly.

The Space is an important character when attempting to produce DTP-like documents and it is a “moving target” when you start mixing character sizes. Quill has no column function so, to produce columns, type the left-hand one first, go back to the right-hand end of the top line, then tab across to where you want the second column to start. Type the first line of the second column but do not let word wrapping occur, as that puts the wrapped text into the first column.

Used the down-cursor key to go to the next line and repeat the process. This will

amount of figuring, you will not be able to say what the actual gap between the columns is for this line, wherever you switch to the different size. One thing you can do is to compensate for printer codes in the first column by moving the adjacent text in the second column one space to the right for every code, to cancel the effect of the codes being removed at print time.

Print code

You can see from the screen dump — figure two — that getting the correct spacing between columns may require you to have some “small spaces” and some “large spaces”; if the left edge of the right-hand column is offset only about half a 12cpi character to the left, you can insert the print code for 17cpi and type a Space to improve the alignment. For that reason it is sometimes preferable to insert the code for a new character size two spaces

THE

P + R : O = G < S

If you have a program worthy of consideration, send it to 'The Progs',
Sinclair QL World, Greencoat House, Francis Street, London SW1P 1DG.
We pay for everything published at the usual page rates.

Program of the month

GIRO by Henry Wrighton

In *Giro*, you are the pilot of a giro pod which is controlled by the cursor keys.

Your mission is to rescue survivors from space ferry disasters by flying very close to their white escape capsules. Each time you hit any part of the scattered space debris your shield is weakened. When either your fuel or your shield runs out, you die. You can take on fresh fuel at the beginning of each successful mission but you cannot get your shield repaired.

Be warned that you are beyond the influence of gravity and friction. Once moving, your giro pod will continue to move and each time you use your rockets in the same direction you will increase your speed. To reverse direction you must first slow the giro by using the opposite cursor key and using a lateral cursor key will only modify your path, not send you at right angles to your current trajectory. Using the rockets uses fuel as well but anything is preferable to using your irreplaceable shield. If you have to collide with a piece of debris it is better to do it quickly, as the more slowly you clear the obstacle the more shield you will lose.

Fortunately, your automatic pilot will ensure that the giro pod remains in the space sector to which you have been assigned, so you do not have to use your rockets to avoid the edge of the screen.

```
100 :
110 REMark /-----\
120 REMark :          GIRO          :
130 REMark :                      :
140 REMark :    by Henry Wrightson  :
150 REMark :    10th August 1989   :
160 REMark \-----/
170 :

180 PLAY_GAME
190 :

200 DEFine PROCedure PLAY_GAME
210   defchar
220   REPEAT GAME
230     Setup
240     REPEAT Giro
250       tcap=tcap+1:cap=tcap:junk:fuel=2000:
set_display
260       set_cap
270       main
280       IF fin=1 THEN EXIT Giro
290       fin=0
300       REPEAT bonus
310         fu 20:sc=sc+(2*(tcap-9)):AT #0,3,8
:PRINT #0,sc:bee 1
320       IF fin THEN EXIT bonus
330       END REPEAT bonus
340     END REPEAT Giro
350     OVER 0:fin=0:i=0:AT 11,11:PRINT "Anoth
er game?"
360     REPEAT g
370       i=(i+1) MOD 7:INK i:AT 10,13
380       PAUSE 5:PRINT "GAME OVER"
390       IF KEYROW(5)=64 THEN EXIT g
400     END REPEAT g
410   END REPEAT GAME
420 END DEFine
430 :
```



```

440 DEFine PROCEDURE Setup
450 MODE 8:PAPER 0:CLS:CLS#0
460 DIM al(36,19)
470 set_screen:INK 7
480 sh=200:tcap=9:fuel=2000:sc=0
490 pod$="!@#%":pm=1
500 END DEFine
510 :

520 DEFine PROCEDURE main
530 yy=0:xx=0:x=216:y=100:ix=2:iy=1:fin=0
540 OVER 0:CURSOR x,y:PRINT pod$(1):OVER -1
550 REPEAT loop
560 get_keys
570 IF x+xx<0 OR x+xx>436 THEN xx=-xx:bee
2
580 IF y+yy<0 OR y+yy>190 THEN yy=-yy:bee
2
590 IF al((x)/12,(y)/10)=1 THEN clear_cap:
bee 3
600 IF al((x)/12,(y)/10)=2 THEN shield:bee
4
610 x=x+xx:y=y+yy
620 CURSOR x-xx,y-yy:PRINT pod$(pm)
630 IF fin THEN EXIT loop
640 pm=(pm MOD 5)+1:CURSOR x,y:PRINT pod$(
pm)
650 END REPEAT loop
660 END DEFine
670 :

680 DEFine PROCEDURE get_keys
690 k=KEYROW(1)
700 tx=xx:ty=yy
710 SELECT ON k
720 =128:yy=yy+iy
730 =144:yy=yy+iy:xx=xx+ix
740 =16 :xx=xx+ix
750 =20 :yy=yy-iy:xx=xx+ix
760 =4 :yy=yy-iy
770 =6 :yy=yy-iy:xx=xx-ix
780 =2 :xx=xx-ix
790 =130:yy=yy+iy:xx=xx-ix
800 END SELECT
810 IF k>0 THEN fu 10
820 IF xx>11 OR xx<-11 THEN xx=tx
830 IF yy>8 OR yy<-8 THEN yy=ty
840 END DEFine
850 :

860 DEFine PROCEDURE set_cap
870 FOR k=1 TO tcap
880 REPEAT pp
890 ay=RND(1 TO 18):ax=RND(1 TO 35)
900 IF ax<>18 AND ay<>10 AND al(ax,ay)=0
THEN EXIT pp
910 END REPEAT pp
920 al(ax,ay)=1
930 AT ay,ax:PRINT "^":bee 5
940 END FOR k
950 END DEFine
960 :

970 DEFine PROCEDURE clear_cap
980 al(x/12,y/10)=0
990 AT y/10,x/12:PRINT "^"
1000 cap=cap-1:IF cap=0 THEN fin=2
1010 sc=sc+10:AT #0,3,8:PRINT #0,sc
1020 END DEFine
1030 :

1040 DEFine PROCEDURE set_screen
1050 FOR k=1 TO 100
1060 INK RND(1 TO 5):POINT RND(160),RND(10
0)
1070 END FOR k
1080 FOR k=1 TO RND(3 TO 6)
1090 INK RND(3 TO 6): star
1100 END FOR k
1110 INK 7:ju$="()_+~"
1120 FOR k=1 TO 12
1130 junk
1140 END FOR k
1150 END DEFine
1160 :

1170 DEFine PROCEDURE star
1180 x=RND(160):y=RND(100)
1190 POINT x,y:POINT x-1,y+1:POINT x,y+2:POI
NT x+1,y+1
1200 END DEFine
1210 :
1220 DEFine PROCEDURE junk
1230 REPEAT j
1240 x=RND(1 TO 35):y=RND(1 TO 18)
1250 IF x<>18 AND y<>10 THEN EXIT j
1260 END REPEAT j
1270 al(x,y)=2
1280 INK 4:AT y,x:PRINT ju$(RND(1 TO 5)):INK
7:bee 6
1290 END DEFine
1300 :

1310 DEFine PROCEDURE shield
1320 BLOCK #0,5,12,100+sh,18,0
1330 IF sh=0 THEN fin=1
1340 sh=sh-5
1350 END DEFine
1360 :

1370 DEFine PROCEDURE fu(f)
1380 fuel=fuel-f
1390 BLOCK #0,f,12,100+(fuel/10),0,0
1400 IF fuel<=0 THEN fin=1
1410 END DEFine
1420 :

1430 DEFine PROCEDURE set_display
1440 AT #0,0,0:PRINT #0,"Fuel : "
1450 BLOCK #0,fuel/10,12,100,0,5
1460 AT #0,2,0:PRINT #0,"Shields:"
1470 BLOCK #0,sh,12,100,18,5
1480 AT #0,3,0:PRINT #0,"Score :
Level : ";tcap-9
1490 AT #0,3,8:PRINT #0,sc
1500 END DEFine
1510 :

1520 DEFine PROCEDURE bee(b)
1530 SELECT ON b
1540 =1:BEEP 100,10
1550 =2:BEEP 3000,0,200,2,3
1560 =3:BEEP 500,0
1570 =4:BEEP 1000,10,20,1,1
1580 =5:BEEP 1000,0,150,100,1
1590 =6:BEEP 1000,100
1600 END SELECT
1610 END DEFine
1620 :

1630 DEFine PROCEDURE defchar
1640 St = PEEK_L(PEEK_L(163960)+4)+42
1650 old = PEEK_L(St)
1660 news=RESPR(875)
1670 FOR n=0 TO 875 STEP 4
1680 POKE_L news+n,PEEK_L (old+n)
1690 END FOR n
1700 POKE_L St,news
1710 RESTORE 1800
1720 numberofchars=11
1730 FOR char=1 TO numberofchars
1740 READ c$:c=CODE(c$)
1750 charpoke=news+10+(c-32)*9
1760 FOR dat=1 TO 9
1770 READ d:POKE charpoke+dat,d
1780 END FOR dat
1790 END FOR char
1800 REMark ? DATA ?
1810 DATA "(",0,8,28,40,88,100,28,56,32
1820 DATA ")",28,20,44,20,52,60,108,0,0
1830 DATA " ",16,24,84,88,112,32,48,16,16
1840 DATA "+",96,48,56,44,108,52,36,120,64
1850 DATA "~",48,48,32,40,124,76,96,96,96
1860 DATA "!",56,124,124,64,64,124,124,56,0
1870 DATA "@",56,124,124,32,32,124,124,56,0
1880 DATA "#",56,124,124,16,16,124,124,56,0
1890 DATA "$",56,124,124,8,8,124,124,56,0
1900 DATA "%",56,124,124,4,4,124,124,56,0
1910 DATA "^",0,56,68,92,92,68,56,0,0
1920 END DEFine

```

P+R:O=GS

CAT/CATSTAT by LYNDHURST DAVIES

Cat is a command similar to the standard Qdos DIR command, except that the files are displayed in ASCII order; the number information and media is printed at the end of the list of files. The display is frozen at the end of each screen displayed and started again by pressing any key, usually by use of the F5 key.

Catstat is an extension of CAT, having a file statistics displayed. These statistics are date stamped if present; file length and file type; any type-dependent information.

File types are ASCII, Object, Executable data space is also displayed - Not Standard.

The order of the files and sector information are as for CAT. Both CAT and Catstat

have extended Bad Parameter errors showing the appropriate syntax for the command. So if you forget how to use the command, type it in and it tells you how.

To create the program, type in the listing and run it. That will create two files on a defined medium which, can then be loaded in the following manner:

LRUN mdv1-CAT-boot

Note that the device should be the device on which the program was created.

CAT will sign on with the following message in channel 0:

Extended catalogue installed
Version A08

1987 I L Davies

At that point the CAT command is installed in the system and can be used as any other resident command.

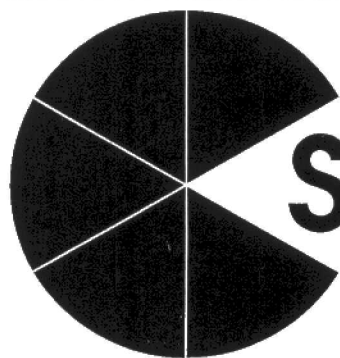
```
10 CLS:INPUT "Please enter device for creation e.g
. MDV1_ ";dev$
20 RESTORE
30 X=RESPR(2560):CS=0:lines=100
40 FOR I=0 TO 2540 STEP 20
50 FOR j=0 TO 18 STEP 2
60 READ A:POKE_W (I+X+j),A:CS=CS+A
70 NEXT j
80 READ A:IF A<>CS THEN GO TO 190
90 IF A=CS THEN CS=0:lines=lines+10
100 NEXT I
110 CALL X
120 PRINT "Saving _bin file and Basic loader."
130 SBYTES dev$;"CAT_bin",X,2556
140 OPEN_NEW #5,dev$;"CAT_boot"
150 READ a$,b$,c$,d$
160 PRINT #5,a$;b$;dev$;c$;d$
170 CLOSE #5
180 STOP
190 PRINT "Checksum Error - Line ";lines
200 STOP
210 DATA 17402,32,13433,0,272,20114,8316,0,0,17402
,76971
220 DATA 66,13433,0,208,20114,28672,20085,1,824,83
5,84238
230 DATA 16724,830,1859,16724,21332,16724,0,0,0,-1
,74192
240 DATA -1,-1,-1,-1,-1,-1,-1,0,0,0,-7
250 DATA 0,-1,-1,60,17784,29797,28260,25956,8291,2
4948,135094
260 DATA 24940,28533,26469,8265,28275,29793,27756,
25956,2646,25970,228603
270 DATA 29545,28526,8257,12344,2687,8241,14648,14
112,18720,19488,156568
280 DATA 17505,30313,25971,11786,0,0,46,25185,2563
2,28769,165207
290 DATA 29281,28005,29797,29230,2645,29537,26469,
8250,11552,17217,211983
300 DATA 21536,23331,25448,24942,28261,27741,11364
,25974,26979,25866,241442
310 DATA 50,25185,25632,28769,29281,28005,29797,29
230,2645,29537,228131
320 DATA 26469,8250,11552,17217,21587,21569,21536,
23331,25448,24942,201901
330 DATA 28261,27741,11364,25974,26979,25866,2,200
79,0,0,166266
340 DATA 5,8262,26988,25856,0,0,38,8294,28533,2826
0,126236
350 DATA 11786,2643,25955,29807,29216,26990,26223,
29293,24948,26991,233852
```

```
360 DATA 28218,11530,21615,29793,27680,15648,0,0,9
,2630,137123
370 DATA 29285,25888,8253,8192,0,0,9,2645,29541,25
632,129445
380 DATA 8253,8192,0,0,27,2570,19813,25705,24864,2
8257,117681
390 DATA 28005,8250,11552,0,0,0,0,0,0,0,47807
400 DATA 0,0,0,0,0,0,0,0,0,0,0
410 DATA 0,0,0,0,0,0,0,0,0,0,0
420 DATA 0,0,0,0,0,5,8258,31092,25856,0,65211
430 DATA 0,0,16,11296,20322,27237,25460,8262,26988
,25902,145483
440 DATA 2570,0,0,0,14,11296,17784,25955,30068,249
30,112617
450 DATA 27749,11786,0,0,10,11296,16755,25449,2692
6,2570,122541
460 DATA 0,0,17,11296,20079,29728,21364,24942,2569
7,29284,162407
470 DATA 11786,2560,0,0,14,8292,24948,24864,29552,
24931,126947
480 DATA 25902,2570,0,0,-16132,40,8302,48,-11840,-
19986,-11096
490 DATA 52,27648,22,8240,-6144,-20292,0,0,27904,8
,37438
500 DATA 8256,28672,20085,28922,20085,18663,24672,
12817,13330,-19391,156111
510 DATA 28416,4,12802,21313,-11268,0,2,-10756,0,2
,40515
520 DATA -19191,26112,10,20937,-8,24576,10,27904,1
2,28160,108522
530 DATA 14,28927,24576,10,28672,24576,4,28673,196
79,1542,156673
540 DATA 20085,18663,-16320,12348,15,8745,0,9065,6
4,0,52665
550 DATA 9025,64,-11268,0,4,20936,-22,19679,515,20
085,59018
560 DATA 18663,20544,13884,-1,28677,20035,19679,52
2,20085,18663,160751
570 DATA 28768,17402,82,30208,24832,76,1538,48,496
6,21059,128879
580 DATA 19073,26112,-16,2179,0,26368,26,12041,120
35,4945,102763
590 DATA -1,21129,20939,-8,9759,8799,21385,2243,0,
13059,97304
600 DATA 13433,0,208,20114,19679,1550,20085,0,0,0,
75069
610 DATA 0,0,0,29696,21122,1153,0,10,28160,-10,801
31
620 DATA 19073,26368,10,1665,0,10,21378,-15039,200
85,8791,82341
```


630 DATA -27652,0,2,11593,88,13244,1,-6144,24576,1
02,15810
640 DATA 17402,-792,12988,0,24576,10,17402,-804,12
988,1,83771
650 DATA 12078,88,-17461,26368,1382,12045,-25653,8
717,10847,-6519,21892
660 DATA -19780,0,1,26368,-70,-19780,0,2,26112,135
2,14205
670 DATA -25604,0,8,2227,7,-6143,26368,1336,12921,
0,11120
680 DATA 274,20113,26112,1324,-10244,0,8,-9220,0,8
,28375
690 DATA 12045,17024,12339,-6144,576,3855,3136,513
,26442,12339,82125
700 DATA -6142,27456,-6264,-12114,24,17025,12854,2
050,-11602,32,23319
710 DATA 16960,4150,6144,13312,22080,2176,0,8814,8
8,-27712,46012
720 DATA 11593,88,15746,-26624,22336,7606,6145,-26
622,21121,21129,52518
730 DATA 20936,-12,24576,14,20672,24586,12921,0,27
8,20113,124084
740 DATA 17024,10847,26112,1204,8302,88,11615,88,1
7402,-996,91686
750 DATA 8840,12040,28673,8764,-1,-1,9788,0,4,2003
6,88143
760 DATA 20034,19072,26112,1200,17402,-1052,8840,8
791,12849,-6144,107104
770 DATA -11639,1665,0,3,2177,0,8769,12337,-6144,2
4832,32000
780 DATA -592,19072,26112,1164,17402,-1088,8840,13
884,-1,17402,102195
790 DATA -1086,28683,20035,19072,26368,12,17402,-1
100,13180,32760,155326
800 DATA 2,8314,-1126,30720,13372,64,17402,-828,28
675,20035,116630
810 DATA -20292,-1,-10,26368,14,19072,26112,1096,2
1060,24576,97995
820 DATA -28,28674,20034,8287,28673,8764,-1,-1,978
8,0,104190
830 DATA 4,20036,20034,19072,26112,1056,17402,-119
6,8840,24832,136192
840 DATA 1238,18938,-1192,10428,0,0,19076,26368,10
44,10428,86328
850 DATA -1,-1,12036,8708,-4727,9276,-1,-1,28696,2
0033,74018
860 DATA 19072,26112,1006,17914,-1242,9352,10263,1
156,0,1,83634
870 DATA 8314,-1264,29184,13884,-1,13372,64,8826,-
1270,28675,99784
880 DATA 20035,19072,26112,964,21057,15418,-1282,1
9014,26368,6,146764
890 DATA 24832,1032,20940,-28,10271,3204,0,1,26368
,94,86714
900 DATA 19076,26368,88,12036,1092,2,12036,32256,8
826,-1332,110448
910 DATA -11268,0,14,9289,-10756,0,64,24832,-826,1
9072,30421
920 DATA 26112,24,-27652,0,14,24832,-770,11836,-1,
-1,34394
930 DATA -11268,0,14,-11268,0,64,-10756,0,64,20940
,12210
940 DATA -46,10271,19079,26112,-76,10271,21316,882
6,-1410,-11268,83075
950 DATA 0,14,31232,18938,-1414,15916,2,1095,1,120
41,77825
960 DATA 3153,0,26368,442,8314,-1448,24832,848,134
33,0,75942
970 DATA 208,20114,19072,26112,780,4668,10,24832,-
836,19072,114032
980 DATA 26112,766,1605,1,15418,-1480,19014,26368,
392,8791,96987
990 DATA 8745,38,19073,26368,56,12041,8814,88,1343
3,0,88656
1000 DATA 236,20114,19072,26112,962,24832,770,-113
14,8314,-1536,87562
1010 DATA 13433,0,208,20114,19072,26112,938,4668,1
0,24832,109387
1020 DATA -920,8799,8791,8745,-14,24832,-914,19072
,26112,670,95173
1030 DATA 10825,17402,-1214,8314,-1586,13433,0,208
,12033,20114,79529
1040 DATA 8735,19072,26112,642,-19780,0,1,26368,16
,4668,65834
1050 DATA 115,24832,-984,19072,26112,618,4653,-9,1
8945,26368,119722
1060 DATA 218,1025,1,18945,26368,80,1025,1,18945,2
6368,92976

1070 DATA 36,17402,-1220,8314,-1666,24832,630,2483
2,626,13433,87219
1080 DATA 0,208,20114,19072,26112,558,24576,194,17
402,-1314,106922
1090 DATA 8314,-1700,24832,596,24832,592,13433,0,2
08,20114,91221
1100 DATA 19072,26112,524,24576,160,17402,-1324,83
14,-1734,24832,117934
1110 DATA 562,13433,0,208,20114,19072,26112,494,24
832,544,105371
1120 DATA 8749,-8,24832,-1108,19072,26112,476,1740
2,-1406,8314,102435
1130 DATA -1778,13433,0,208,12033,20114,8735,19072
,26112,450,98379
1140 DATA -19780,0,1,26368,16,4668,115,24832,-1176
,19072,54116
1150 DATA 26112,426,17402,-1358,8314,-1828,24832,4
68,24832,464,99664
1160 DATA 13433,0,208,20114,19072,26112,396,24576,
32,17402,121345
1170 DATA -1432,8314,-1862,24832,434,24832,430,134
33,0,208,69189
1180 DATA 20114,19072,26112,362,8799,-11268,0,64,2
0940,-460,83735
1190 DATA 4668,10,24832,-1266,19072,26112,336,2483
2,386,19013,117995
1200 DATA 26368,338,29184,12805,24832,-1272,19072,
26112,312,17402,155153
1210 DATA -1740,8314,-1942,13433,0,208,20114,19072
,26112,290,83861
1220 DATA 3141,1,26368,16,4668,115,24832,-1334,190
72,26112,102991
1230 DATA 268,24832,318,24832,314,24832,310,17402,
-1784,13433,104757
1240 DATA 0,208,20114,19072,26112,238,17402,-1708,
13884,-1,95321
1250 DATA 8314,-2024,28741,20035,19072,26112,148,4
796,10,12033,117237
1260 DATA 8314,-2040,12921,0,206,20113,19072,26112
,190,24832,109720
1270 DATA 242,17402,-1808,8314,-2066,13433,0,208,2
0114,19072,74911
1280 DATA 26112,164,8735,13313,18497,-27583,12034,
12921,0,206,64399
1290 DATA 20113,19072,26112,140,24832,192,17402,-1
842,8314,-2116,112219
1300 DATA 13433,0,208,20114,19072,26112,114,8735,1
2921,0,100709
1310 DATA 206,20113,19072,26112,100,24832,150,2483
2,146,17402,132965

1320 DATA -1872,8314,-2162,13433,0,208,20114,19072
,26112,70,83289
1330 DATA 8314,-2184,28674,20034,8762,-2178,19073,
26368,10,8314,115187
1340 DATA -2194,28697,20033,28672,20085,15418,-220
2,19014,26368,10,153901
1350 DATA 16890,-2082,24576,6,16890,-2138,-11780,-
32768,0,8200,17794
1360 DATA 11615,88,20085,11807,20085,12032,28674,2
0034,8223,20085,152728
1370 DATA 18938,-2248,15916,2,1095,1,17402,-2082,8
314,-2276,55062
1380 DATA 13433,0,208,20114,19072,26112,-44,14908,
2,24576,118381
1390 DATA -362,1095,1,19015,28160,22,5116,255,2,-3
2717,20587
1400 DATA 18938,-2308,15916,2,1095,1,20085,18663,-
2,17026,89416
1410 DATA 16890,-2036,12824,-27652,0,64,12041,-112
68,0,14,877
1420 DATA 13337,19010,26368,64,12034,-11199,12482,
-11839,9247,1090,70594
1430 DATA 1,4313,20938,-4,16890,-2084,-11780,0,2,3
0209,58485
1440 DATA 29439,28673,20034,8799,13884,-1,13372,64
,28743,20035,163042
1450 DATA 28674,20034,19679,32767,20085,8799,19679
,32767,20085,18663,221232
1460 DATA -2,17402,-2138,9338,-2426,13042,-6144,12
841,-2,12993,54904
1470 DATA 1089,1,-10756,0,2,4850,-6144,-10756,0,1,
-21713
1480 DATA 20937,-12,19679,32767,20085,8799,24576,-
246,0,0,126585
1490 DATA '10 x=resp(2556)', '20 lbytes', 'CAT_bin
,x', '30 call x'



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